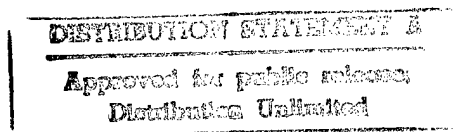


Test and Evaluation



OPERATIONAL TEST AND EVALUATION

This instruction provides guidance and procedures for operational test and evaluation (OT&E) in the Air Force. It applies to all agencies involved in or supporting OT&E. It describes how to prepare, plan for, and report on operational test. It implements the OT&E policies outlined in Department of Defense (DoD) Directive 5000.1, 23 February 1991; DoD Instruction 5000.2, 23 February 1991; DoD 5000.2-M, 23 February 1991; and AFR 99-1. To ensure a full understanding of the test process this instruction should be supplemented by Air Force Instruction (AFI) 99-103. In addition, users of this instruction should familiarize themselves with the referenced DoD guidance, Air Force 63- series publications, and other AFI 99-series publications. Implementing, operating, and supporting commands or agencies, within the Air Force, may supplement this instruction. Send draft or proposed Major Command (MAJCOM) OT&E instructions and supplements to HQ AFOTEC/XR. Send final MAJCOM OT&E instructions and supplements to HQ USAF /TEP and HQ AFOTEC/XR. Submit recommended changes to this instruction via AF Form 847, *Recommendation for Change of Publication*, to HQ AFOTEC/XR with info copy to HQ USAF/TEP.

SUMMARY OF CHANGES

This revision aligns the instruction with AFR 99-1, substantially revising AFR 55-43.

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Chapter 1

GENERAL POLICY AND GUIDANCE

1.1. Test and Evaluation (T&E) Purpose. The Air Force needs to ensure the weapon systems it uses, and the systems that support them, meet or exceed operational requirements in terms of effectiveness and suitability and

are ready for fielding. To do so, the Air Force conducts realistic, cost-effective, and credible T&E programs through all phases of the acquisition and fielding process.

1.2. Operational Test and Evaluation Purpose. The primary purpose of OT&E is to determine the operational effectiveness and suitability of systems. Testers conduct OT&E in as realistic an operational environment as possible to determine if a system meets the users' requirements and supports mission accomplishment. These realistic conditions should be representative of both combat stress and peacetime operational conditions. Testers use modeling and simulation (M&S) as an evaluation tool to augment, extend, or enhance field test results. Testers conduct OT&E to:

- Determine the ability of a system to support operational task accomplishment
- Answer critical operational issues (COI) and determine if the key parameters are met
- Identify and report operational capabilities, limitations, and deficiencies to include:
 - Documenting deficiencies for resolution
 - Recommending and evaluating changes in system configuration
 - Providing information for developing and refining logistics and software support requirements for the system
 - Providing information for developing and refining training, tactics, techniques, and doctrine throughout the life of the system
 - Providing information for developing and refining environmental impact statements (EIS)
- Provide information for refining operation and maintenance (O&M) cost estimates, or identify system characteristics or deficiencies that affect O&M costs
- Determine if support equipment and technical publications support the mission
- Assess the survivability of the system in the operational environment
- Assess interoperability and provide inputs to the Joint Interoperability Test Center (JITC) for joint interoperability certification

1.3. Types of OT&E. There are three basic types of OT&E.

1.3.1. Initial Operational Test and Evaluation (IOT&E). IOT&E is required to be done on production or production representative articles to support a Milestone III full-rate production decision. It is conducted by the Air Force Operational Test and Evaluation Center (AFOTEC) under conditions that are as operationally realistic as possible and practical. AFOTEC plans and conducts all Air Force IOT&E using 3600 (Research and Development (R&D)) funds. IOT&E can also be used to support fielding or initial operational capability (IOC) decisions as well as assist in tactics development for the using command.

1.3.2. Qualification Operational Test and Evaluation (QOT&E). QOT&E is identical to IOT&E, in that QOT&E is accomplished on production representative articles, under conditions that are as operationally realistic as possible and practical. AFOTEC will conduct QOT&E on programs where there has been no R&D effort such as non-developmental items (NDI), commercial off-the-shelf (COTS) systems, or certain modifications to existing systems. QOT&E is conducted by AFOTEC using 3400 (O&M) funds and the results support Milestone III procurement, fielding, or IOC decisions.

1.3.3. Follow-on Operational Test and Evaluation (FOT&E). FOT&E is conducted over the life of the system to ensure the system continues to meet user requirements and to explore non-material means of satisfying deficiencies. Air Force MAJCOM are responsible for the conduct of FOT&E. In certain cases, HQ USAF will direct AFOTEC to conduct a specific FOT&E. The Air Force conducts FOT&E to:

- Refine estimates made during IOT&E or QOT&E
- Complete deferred IOT&E or QOT&E testing
- Evaluate changes and verify correction of deficiencies
- Assist in tactics development
- Reevaluate the system to ensure it continues to meet operational needs

The Air Force uses 3400 (O&M) funds for FOT&E.

1.4. Combining OT&E with DT&E. OT&E and developmental test and evaluation (DT&E) are separate and distinct, but the resources needed to conduct and support the two efforts are often similar. Much of the test data generated by each are beneficial to both; therefore, portions of DT&E and OT&E will be combined when prudent to expedite system acquisition and reduce costs.

Single managers (SM) will document combined tests in the Test and Evaluation Master Plan (TEMP). When planning combined testing, developmental and operational testers must integrate the necessary test conditions and data requirements. Combined testing will not compromise the objectives of DT&E or OT&E. Operational testers must conduct a dedicated phase (portion entirely independent of the developer, contractor, and user) prior to the production/procurement decision (Milestone III). Refer to Air Force Instruction (AFI) 99-101, *Developmental Test and Evaluation*, for additional guidance and procedures on DT&E and combined testing.

1.5. Conducting OT&E with other services/agencies (Multiservice OT&E). Multiservice OT&E is conducted with other government agencies or other service operational test agency (OTA) participation. In general, multiservice OT&E is done to support multiservice acquisitions. Multiservice OT&E will be conducted according to the T&E directives of the lead test service/agency, or as agreed to between participants in a memorandum of agreement (MOA). The lead service/agency will include supporting service test requirements in the multiservice test plans. When the Air Force is lead service, the Air Force will attempt to incorporate all the services' unique requirements into a single plan. If separate service plans are required they will be included as attachments to the Air Force plan. The Air Force will publish a single report with the other services' results attached.

1.6. Other OT&E-Related Activities.

1.6.1. Operational Utility Evaluation (OUE). OUEs pertain to those operational tests clearly outside the scope of the tests described in paragraph 1.3. OUEs are not limited to, but may be conducted to validate a concept or expand the mission of an existing (perhaps modified) weapon system to a different role or mission. OUEs are typically HQ USAF-directed and AFOTEC or MAJCOM-conducted and are specifically limited in time and scope. OUEs are funded with the same type of appropriations as the parent program.

1.6.2. Operational Assessments (OA). OAs are normally precursors to IOT&E/QOT&E conducted by AFOTEC to provide information to developers, users, and decision makers. AFOTEC will not conduct OAs as a substitute for or in lieu of OT&E. OAs conducted prior to MS II are early operational assessments (EOA). AFOTEC will conduct OAs as directed by or coordinated with AF/TE. OAs provide the following kinds of information:

- Assessments of major impacts to operational effectiveness and suitability

- Identification of programmatic voids adversely impacting the ability to meet operational requirements
- Testability of operational requirements
- Ability of programs to support operational testing
- Readiness of a system for low-rate initial production (LRIP)
- Answers to specific questions or issues as raised by senior decision makers

1.6.3. Tactics Development and Evaluation (TD&E). TD&E is the formal portion of a Combat Air Forces tactics development program designed to fully exploit a system's capabilities. It includes the research, analysis, development, test, and evaluation of specific employment tactics against anticipated threats. The using command conducts TD&E, using the same standards and rigor as OT&E.

1.6.4. Joint Test and Evaluation (JT&E). JT&E is used to evaluate technical or operational concepts which have applicability to more than one service. JT&Es are Office of the Secretary of Defense (OSD)-directed and funded. Refer to AFI 99-106, *Joint Test and Evaluation*, for more information.

1.7. Waiver Requests. The HQ USAF, Director, Test and Evaluation (HQ USAF/TE) is the sole waiver authority for this instruction. Submit waiver requests in writing through HQ AFOTEC/CC to HQ USAF/TE. Waiver requests with rationale must be submitted with user, developer, and tester concurrence. Once HQ USAF/TE approves waivers in writing, single managers in the TEMP and the program officers in the Program Management Directive (PMD) will document them.

1.8. Management of OT&E.

1.8.1. Office of the Secretary of Defense, Director, Operational Test and Evaluation (OSD/DOT&E):

- Reports directly to the Secretary of Defense (SECDEF) and Congress
- Formulates OT&E policy and procedures for DoD and is the principal advisor to SECDEF for OT&E matters

- Exercises oversight responsibility over major defense acquisition programs or any program in which the SECDEF, OSD, or Congress has special interest as defined in an annually published OSD T&E oversight list
 - Approves the TEMP in conjunction with Director, Test and Evaluation (OSD/DT&E)
 - Approves the adequacy of the OT&E plan
 - Determines the quantity of operational test articles for Acquisition Category (ACAT) I programs
 - Submits a beyond low-rate initial production (B-LRIP) report to the SECDEF, the Under Secretary of Defense for Acquisition and Technology (USD(A&T)), and the congressional committees on Armed Services and Appropriations before the system can be committed to full-rate production

1.8.2. HQ USAF/TE:

- Is responsible for policy, advocacy of test resources, and oversight of all Air Force T&E processes and programs
- Reviews and coordinates on Mission Need Statements (MNS), Cost and Operational Effectiveness Analyses (COEA), Operational Requirements Documents (ORD), and other T&E-related documentation used by the Air Staff, DoD, and the Congress
- Determines, in conjunction with AFOTEC, the OT&E strategy in support of a system's acquisition strategy and designates test responsibilities in the PMD and TEMP
- Acts as the final review authority and signs TEMPs prior to Air Force Acquisition Executive (AFAE) approval
- Reviews and authorizes the release of any Air Force test concept briefing and OT&E plan outside the Air Force

1.8.3. Assistant Secretary of the Air Force for Acquisition (SAF/AQ):

- Designated the Service Acquisition Executive
- Documents system T&E responsibilities through the PMD
- Acts as the Air Force TEMP approval authority for ACAT I and II and all selected OSD T&E oversight program
- Ensures Program Executive Officers (PEO) and Designated Acquisition Commanders (DAC) certify program readiness for dedicated OT&E

1.8.4. AFOTEC:

- Reports directly to the Air Force Chief of Staff (CSAF)
- Manages the Air Force OT&E program
- Determines the number of operational test articles for ACAT II-IV, I/QOT&E programs
- Plans, conducts, and reports all IOT&E and QOT&E
- Conducts HQ USAF/TE-directed FOT&E, OAs, and OUEs

1.8.5. **Single Manager (SM).** The SM may be a system program director (SPD), product group manager, or materiel group manager.

- Manages all aspects of a specific acquisition program
- Responsible for establishing the Test Plan Working Group (TPWG)
- Develops and coordinates the TEMP, in conjunction with the Responsible Test organization (RTO) and operational test agency
- Provides the required number of test articles as determined by OSD or AFOTEC
- Provides acquisition program strategy documentation to AFOTEC
- Establishes and manages the deficiency reporting process

1.8.6. Responsible Test Organization:

- Conducts and reports on DT&E in support of the acquisition program (See AFI 99-101)

- Integrates DT&E and OT&E test requirements for combined T&E programs
- Participates in the certification of readiness for dedicated OT&E

Plan, conduct,

- Are responsible for the MNS, COEA, ORD, and Concept of Operations (CONOPS)
- Plan, conduct, and report on FOT&E, TD&E, and other testing designated by HQ USAF

1.8.7. MAJCOMs:

Chapter 2

ACQUISITION AND TEST DOCUMENTATION

2.1. Introduction. The operational tester must be familiar with key acquisition and test documents and their relationships to one another in order to plan effective OT&E. Key acquisition and test documents are listed. Attachment 1 provides a more complete listing of test and test-related documentation related to OT&E.

2.2. Key Documents and Their Relevance to the OT&E Process. Test planners must ensure clear and consistent links exist between the system operational requirements documents, program acquisition documents, and the planning, conduct, execution, and reporting of OT&E.

2.2.1. Mission Need Statement (MNS). Users (MAJCOMs, Commanders in Chief, or HQ USAF) prepare a MNS upon identification of a deficiency to accomplish a task or mission, that cannot be satisfied by a change in tactics, doctrine, or training. The MNS identifies and documents mission deficiencies that require materiel solutions in generic, non-system specific, operational terms. An approved MNS (see AFI 10-601, *Mission Needs and Operational Requirements Guidance and Procedures*, for approval process) provides the initial input for identification of T&E critical operational issues.

2.2.2. Acquisition Decision Memorandum (ADM). After approval of the MNS, issuance of an ADM, directs concept studies of alternative programs (Concept Exploration and Definition Phase). The ADM summarizes the USD(A)'s, or designated representative's, decisions and exit criteria established during the milestone decision review or in-process review. The ADM contains directions for acquisition personnel to follow through the next acquisition phase. Operational testers must be aware of the decisions documented in the ADM and the impacts to the test program. The operational tester must evaluate the testability and their implications for each of the concepts being studied. Refer to AF Sup 1 to DoDI 5000.2, *Acquisition Management Policies and Procedures*.

2.2.3. Program Management Directive (PMD). HQ USAF prepares a draft PMD to initiate concept studies after the Milestone Decision Authority (MDA) authorizes the Concept Exploration and Definition Phase (Phase 0) in the ADM. The PMD provides program direction and guidance to commands. The PMD designates implementing, participating, supporting, and OT&E commands, their program responsibilities, and relationships. The PMD also lists review and approval requirements, program objectives, constraints, funding, the decision authority, and identifies the progression prerequisites for the next acquisition phase. Refer to HQ USAF Headquarters Operating Instruction (HOI) 800-2, *Policy and Guidance for Preparing Program Management Directives*.

2.2.4. Cost and Operational Effectiveness Analysis (COEA). The COEA provides an analytical basis to support acquisition milestone decision reviews. The COEA compares alternative solutions on the basis of cost and operational effectiveness, documents analytical rationale for preferring one alternative over another, justifies the need for starting or continuing an acquisition program, and effectively communicates the results to all levels of Air Force leadership. The COEA provides early identification of potential OT&E measures of effectiveness (MOE) and measures of performance (MOP). Operational test agencies must be involved in the development of COEA MOEs and MOPs, ensuring the measures can either be directly tested, evaluated, or derived from other sources such as M&S. Refer to AFI 10-601.

2.2.5. Operational Requirements Document (ORD). The PMD directs the user to develop an ORD according to DoDI 5000.2 and AFI 10-601. The ORD is solution oriented and will be based on the preferred solution selected by the MAJCOM Commander in the COEA. ORDs contain essential quantitative and qualitative operational requirements for the proposed system and are the key to understanding user priorities. Testers must review draft ORDs carefully in order to structure test concepts and planning. The ORD also provides

preliminary tactics and doctrine information, projected climate, terrain, threats, and training and maintenance concepts. These inputs define the projected mission and are essential to planning operationally realistic tests. Operational testers do not develop requirements, but ensure user-provided requirements can be measured and evaluated.

2.2.6. System Threat Assessment Report (STAR). The STAR, for ACAT I programs, or the System Threat Assessment (STA) for ACAT II programs, is the primary source for system specific threat information. The MNS, ORD, and threat environment description (TED) provide general threat information. The TED contains a comprehensive description of threats, including references to other intelligence data. Early in the test planning process, OTAs will prepare a threat summary based on the STAR or STA, related intelligence documents, and user requirements. This threat summary will be a living document evolving in detail as the operational concept and system design mature. Threat summaries will contain a comprehensive unconstrained view of the operational environment (IOC to IOC plus 10 years) and should be the basis for creating a realistic operational test environment. Testers will consider detailed threats a system will encounter when developing the test strategy. Operational testers must include the threat summary as a supplement to the OT&E plan. Refer to AFI 14-201, *Intelligence Production and Applications Requirements* for additional information.

2.2.7. Test and Evaluation Master Plan (TEMP). The TEMP establishes a comprehensive strategy for planning and executing a system's T&E program. The TEMP includes the operational tasks, characteristics, and capabilities (as described in the MNS and ORD). The TEMP documents how testers will address the MOEs, MOPs, and associated test resources. Operational testers will include, in the TEMP, a description of any M&S (to include accreditation approach) they will use in OT&E. Refer to DoDI 5000.2; DoD 5000.2-M, *Defense Acquisition Management Documentation and Reports*; AF Sup 1 to DoD 5000.2M; and AFI 99-101. All ACAT I through IV and PMD-directed programs will have a TEMP. The TEMP accomplishes three things:

- Note: Testers should submit shortfalls as resource requirements to the test investment planning and programming (TIPP) process. For a description of the

TIPP process, refer to AFI 99-109, *Test Resource Planning*.

- Functions as the primary document through which the T&E program is reviewed and/or approved by SAF/AQ, HQ USAF, OSD, and Congress.

2.2.7.1. Test Agencies Responsibilities. Test agencies assist the SM in integrating "user defined" critical operational issues and system characteristics; test objectives and evaluation criteria; and OT&E responsibilities, resources, and schedule into the TEMP. Test agencies will ensure system characteristics, capabilities, COIs, critical parameters, and their criteria, documented in the TEMP, are directly traceable to the ORD.

2.3. Other Supporting Documentation.

2.3.1. Program Introduction Document (PI, also PID). Operational test agencies normally prepare a PI for most test programs having range requirements. PIs are submitted to DoD major range and test facilities as official test program notification.

2.3.2. Support Agreements. Support agreements delineate general host base support requirements and tenant test team and test organization responsibilities. Testers must address in support agreements:

- Unique safety support requirements
- Handling and disposal of any hazardous materials
- Safety and resource protection (to include weather warning and advisories)

Refer to AFI 25-201, *Support Agreements Requirements*.

2.3.3. Memorandum/Letter of Agreement or Understanding (MOA, MOU, LOA, LOU). When an interservice support agreement or a PI can not satisfy tester requirements, an MOA/LOA or MOU/LOU should be established between concerned agencies to formally document respective tasks and responsibilities. Refer to AFI 25-201.

Chapter 3

OT&E ACTIVITIES

3.1. OT&E in the Acquisition Process. The DoD system acquisition process is divided into five phases (Figure 1). During Phase 0 and Phase I, OT&E assists in development of the acquisition strategy and MOEs, and develops the OT&E concept. OT&E involvement during

Phase II includes the planning and execution of IOT&E/QOT&E. During Phases III and IV, FOT&E is conducted to ensure a system retains its effectiveness in a new environment or against new or changing threats.

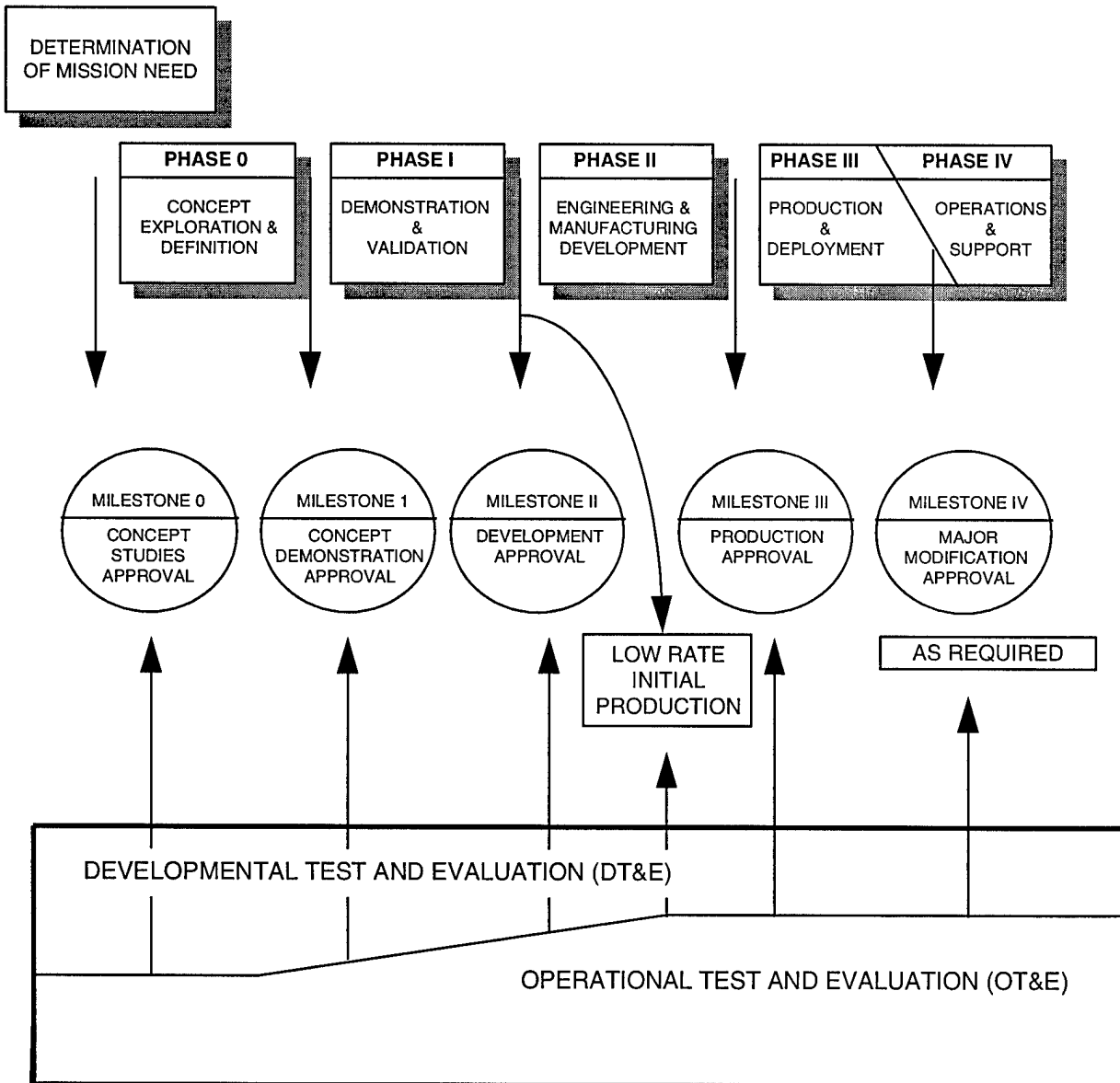


Figure 1.1. The Acquisition Process.

3.1.1. Tailoring OT&E. Some acquisition programs may not follow the standard system acquisition process. Examples of programs that may require tailoring are:

- Systems where the decision to buy must precede the completion of OT&E as in one-of-a-kind systems
- Systems which require early testing on non-production representative articles or prototypes
- Systems where there is limited or non availability of "hands-on" test capability
- Systems that must maintain an on-line operational capability
- Systems operated or maintained by contractors
- Systems which use modeling and simulation to fill voids caused by cost or availability of test resources
- Advanced Concept Technology Demonstration (ACTD) programs
- "Fast Track" Acquisition systems - Systems built to a specific combat mission need, requiring fielding in minimum time to support requirements during combat
- Evolutionary Acquisition System and Modifications - Characterized by the design, development, and deployment of a preliminary capability that includes provisions for the evolutionary addition of future functionality and changes, as requirements are further defined
- Incremental Acquisition Systems - Characterized by the development, acquisition, and deployment of functionality through a number of clearly defined system "increments" that stand on their own

3.1.2. Though the following guidance is built on the framework of a major defense acquisition program, the philosophy presented should be applied to all OT&E and ACAT programs. Because each acquisition program is unique, the operational test community must adapt to support the acquisition strategy being employed. When adapting the test strategy, the test community must still ensure system effectiveness and suitability. This can be done by IOT&Es, QOT&Es, FOT&Es, and possibly OAs, or OUEs or any combination of tests. It is the responsibility of the operational test agency and AF/TE to determine the most cost-effective and efficient manner to

test while still ensuring a correct evaluation of system effectiveness and suitability.

3.2. Pre-Milestone 0.

- The conduct of FOT&E may identify shortfalls and deficiencies, which can be used by the MAJCOM to form the basis of a MNS prior to MS 0.
- AFOTEC begins program monitoring with the issuance of a validated MNS documenting a command's mission need.

3.3. Milestone 0 - Concept Studies Approval.

- At MS 0, senior leadership determine if the documented mission need warrants the initiation of study efforts of alternative concepts.
- Following MS 0, AFOTEC will be involved in the:
 - Development of a COEA
 - Development of an ORD
 - Development of an initial TEMP (based on the evolving preferred solution)
 - Development of other program documentation to support a Milestone I decision

3.4. Phase 0 - Concept Exploration and Definition.

- MAJCOM FOT&E may continue and be used to help explore the feasibility of proposed concepts
- Early AFOTEC involvement during this phase will involve participation in the COEA, ORD, and Temp development.

3.4.1. During COEA development, AFOTEC will:

- Analyze concepts being explored and assess the options under consideration for feasibility of testing and evaluation
- Identify as early as possible shortfalls in the ability to test proposed concepts and preferred solutions; offer fixes or alternatives
- Work MOE/MOP issues with the users for the proposed preferred solution

3.4.2. During ORD development (Refer to AFI 10-601 for ORD development), AFOTEC will:

- Review the draft ORD for early identification of measurable and testable requirements written in operational terms (not specifications). Ensure sufficient operations concept and employment descriptions are specified to develop operational test scenarios. Work with the user to get these changes in the final MS I ORD

3.4.3. During TEMP preparation (Refer to AF Sup 1 to DODI 5000.2), AFOTEC will:

- Create and document an OT&E strategy to support the acquisition of the preferred solution
- Interface the OT&E strategy with the acquisition strategy and other test strategies (e.g. DT&E, Contractor Test (CT), Live Fire Test, etc.)
- Work test planning issues with HQ AFMC or PM/SPO until a TPWG is formed. (Refer to AFI 99-101 for TPWG)
- Prepare preliminary TEMP inputs
- Provide recommended OT&E strategy to AF/TE for approval.

3.5. Milestone I - Concept Demonstration Approval. Senior leadership evaluate the program and determine if the results of Phase 0 warrant establishing a new acquisition program and which option will be pursued. In addition, initial TEMP approval occurs at MS I.

3.6. Phase I - Demonstration and Validation. During Phase I, SAF/AQ issues a PMD directing the program. In addition, the user continues to refine the COEA and the ORD. As data becomes available, the ORD is refined.

3.6.1. During Phase I, AFOTEC will:

- Work with the user to review and refine the COEA and ORD
- Continue to develop and refine the OT&E strategy, outlining the plan and determining sequence of data needed by decision makers (i.e., OUE, OA, IOT&E, FOT&E)
- Continue to review and refine OT&E portions of the TEMP through the TPWG process

- Conduct over-the-shoulder observation/assessment of ongoing DT&E and CT, where appropriate
- Participate in the planning and conduct of combined testing, when combined testing is directed
- Plan and conduct an EOA, when directed, for MS II (LRIP and Long-lead decisions)
- Determine LRIP numbers for OT&E on ACAT II programs

3.6.2. During Phase I, AF/TE will approve, modify, or direct changes to the OT&E strategy, as necessary, via the TPWG and SAF/AQ so changes can be incorporated in the TEMP and PMD updates.

3.7. Milestone II Decision - Development Approval. Senior Leadership evaluate the program and decide if the program warrants continuation into Phase II, Engineering and Manufacturing Development. In addition, approval for low-rate initial production quantities, if appropriate, occurs.

3.8. Phase II - Engineering and Manufacturing Development. During Phase II, AFOTEC will:

- Continue to review and refine OT&E portions of the TEMP through the TPWG process
- Continue development and brief the OT&E test concept (See Paragraph 4.1)
- Conduct over-the-shoulder observation of ongoing DT&E and CT, where appropriate
- Ensure ORD is updated to reflect the most current user requirements and that clear, testable MOE criteria are established
- Conduct OAs as directed by HQ USAF/TE
- Support LRIP decisions if made post-MS II
- Participate in Combined Testing, when it is directed
- Develop the I/QOT&E plan. (See paragraph 4.2 and Attachment 2)
- Participate in and support the PEO/DAC's Certification of Readiness for Dedicated IOT&E

- Ensure the TEMP, and OT&E plan reflect the most recent ORD requirements before entering test
- Conduct I/QOT&E according to that plan
- Report (via briefings and a test report) IOT&E results to support a MS III decision (See paragraph 4.4 and Attachment 3)
- Participate in Pre-Air Force Systems Acquisition Review Council (AFSARC) T&E Briefings. Lead Pre-AFSARC T&E briefing preparations after certification of readiness for dedicated IOT&E (See paragraph 4.6.2)

3.9. Milestone III - Production Approval. Senior leadership and the Designated Acquisition Authority evaluate the program and decide if the program should enter full-rate production and approval into Phase III, Production and Deployment

3.10. Phase III - Production and Deployment. Each MAJCOM is responsible for planning and conducting FOT&E over the life of the system, to ensure the system maintains its effectiveness and suitability and meets the users requirements as threats, operational environment, technology, mission, or employment techniques change (see Paragraphs 4.1-4.6 for Test Plan Procedures).

- AFOTEC may be tasked to plan/conduct/report on FOT&E to answer specific issues directed by the Milestone Decision Authority after the MS III decision
- In the absence of AFOTEC conducted FOT&E, the MAJCOM assumes primary responsible.

3.10.1. MAJCOMs will:

- Identify shortfalls or deficiencies to the system which impact mission effectiveness or suitability, in effect, possibly documenting a new mission need or need for major modification (see paragraph 4.4 for Test Reporting Procedures)
- Maintain the currency of the OT&E portions of the TEMP
- FOT&E results may be the basis for a MS IV, or new MS 0, decision.

3.11. Pre-MS IV Major Modification Approval, or New MS 0.

- Update or regenerate TEMP
- If FOT&E results were the basis for identifying a deficiency and/or creating a mission need AF/TE may task AFOTEC to conduct an assessment of FOT&E results, or a separate OUE

3.12. Post MS IV.

- AFOTEC evaluates the MS decision and recommends a test strategy and test agency to AF/TE
- AF/TE designates the test agency (AFOTEC vs MAJCOM) and test strategy (I/QOT&E or FOT&E) to support future decisions

Chapter 4

OT&E DOCUMENTATION AND BRIEFINGS

4.1. Developing the Test Concept.

- Test planners, using the strategy-to-task framework outlined in Attachment 4, determine the test's purpose, scope, operational tasks, and test scenarios as derived from the COEA MOEs and MOPs. They develop in outline form a plan which documents effective and efficient use of test resources, facilities, ranges, analysis techniques, and modeling and simulation. Rough estimates are made of test scenarios,

threat laydowns, schedule, resource requirements, and test limitations. These elements form the test concept, a basis for the executable OT&E plan.

- For OSD oversight programs, OSD/DOT&E requires a test concept briefing (at least 120 days prior to test start). HQ USAF/TE must preview and approve all test concept briefings prior to OSD/DOT&E presentation.

4.2. Developing the OT&E Plan.

- The OT&E plan translates the test concept into testable events/scenarios, resources, and responsibilities
- The OT&E plan describes everything needed to complete an independent, operationally realistic evaluation of the weapon system, including discrete procedures for collecting data and specialized analysis techniques for evaluating data. The outline of a test plan is shown at Attachment 2.

4.3. Approving and Publishing the OT&E Plan.

- The test manager/director is responsible for developing and publishing (once approved), the test plan. As a minimum, the plans must be approved by the commander of the operational test agency.
- Draft test concepts and draft test plans should be provided to the system program office at least one year prior to test start. Final test plans are required prior to PEO/DAC certification of readiness for dedicated IOT&E.
- For OSD oversighted programs, OSD/DOT&E must approve test plan adequacy (required 60 days prior to test). HQ USAF/TE will review all Air Force test plans proceeding to OSD and will approve their release.
- Final test plan distribution should be made to all involved parties and will be program dependent. In addition, the test manager/director must submit two copies of the approved OT&E plan to the Defense Technical Information Center (DTIC)

4.4. Test Director Reporting Responsibilities.

OT&E reports are structured to provide a test director the flexibility to provide feedback to the appropriate level at significant stages of the test, immediately following completion, or as a comprehensive summary of the entire test effort. When accomplishing test planning, the test director or manager must review the test effort and determine which reports are appropriate and when they should be provided. These report requirements are then documented in the TEMP and test plan.

4.5. Types of OT&E Reports. These reports are exempt from report control symbol (RCS) licensing in accordance with AFI 37-124, *The Information Collections and Reports (ICR) Management 4Program; Controlling*

Internal, Public, and Interagency Air Force Information Collections.

4.5.1. Status Report. Status reports provide periodic updates and important test findings during OT&E. Test Directors submit status reports in letter or message form with the contents adjusted to meet individual program needs. Status Reports can be submitted periodically or when specific events dictate.

4.5.2. Significant Test Event Report. This Air Force report applies to major test events (i.e. missile or aircraft launches) listed in the TEMP. The test director must consider political sensitivity, public interest, etc. when determining program test events that require a report. The operational test agency must submit the report to HQ USAF/TE within 24 hours of the test event.

4.5.3. Annual Report. Test directors submit annual reports for tests lasting longer than one year. Reports are sent to the appropriate HQ for relay to HQ USAF/TE and DOT&E (if necessary). Testers format and coordinate annual reports the same as final reports.

4.5.4. Interim Summary Report. An interim summary report is provided when the final report can not be completed within 45 calendar days of a milestone or significant program decision. This report (usually message format) summarizes OT&E results in detail to support the decision. The test director should limit interim summary report distribution to final report recipients.

4.5.5. Final OT&E Report. The test director is responsible for preparing the final OT&E report. This report is an executive-level document. The final report answers COIs and reports operational effectiveness and suitability. The report includes: test results, conclusions, and recommendations; and comments on constraints, limitations and any operational impacts found. It also includes prioritized DRs and status to be carried forward to the operating command. The final report must be completed and approved no later than 60 calendar days after the last test event. The report provides test information to decision makers, planners, and operators. It also provides a formal, permanent record of the results of all phases of OT&E. The current phase of OT&E will be reported in the final report, with annexes consisting of executive summaries of any OAs or previous phases of OT&E. It is written objectively and should relate test results to user criteria. Test reports should provide detailed technical information as necessary in separate data documents. Refer to Attachment 3 for final report format and content. Refer to paragraph 4.6 for required briefings associated with the final test report.

- **OSD Oversight Programs.** For OSD T&E oversight programs, send four copies of the final report to HQ USAF/TE. HQ USAF/TE will distribute final reports to DOT&E and Dir, T&E. Test agencies will forward all other reports to HQ USAF/TE for information purposes upon publication.
- **Release Authority Within the DoD.** Test directors have release authority to offices within DoD for on-site OT&E program information with concurrence of their commander. All releases of technical data including plans and reports must be IAW AFI 61-204, *Controlling the Distribution of Classified and Unclassified Scientific and Technical Information*. Test Directors cannot release classified information except as specified in DoD 5200.1, *Information Security Program Regulation*, and associated documents.
- **Release Authority Outside the DoD.** The test director does not have authority to release OT&E information outside DoD channels. Freedom of Information Act (FOIA) requests should be processed according to AFI 37-131, *Air Force Freedom of Information Act Program*. Personnel involved in testing activities must know the releasability restrictions for all test communications.
- Test agencies manage releases to Congress, the General Accounting Office, the Office of Management and Budget, or similar agencies IAW: AFI 90-401, *Air Force Relations With Congress*, and AFI 65-401, *Air Force Relations With the General Accounting Office*.
- The appropriate Public Affairs office must approve release of significant or potentially controversial information.
- The Information Branch of the Office of the Vice Chief of Staff (HQ USAF/CVAII) will release information to NATO and foreign nationals..

4.6. Briefing Requirements.

4.6.1. Air Force System Acquisition Review Council (AFSARC) T&E Briefing. All AFSARC MS I-IV and designated program reviews include presentations by the command owning the requirement, test agencies involved in test, and the Program Executive Officer (PEO/DAC or PM). The T&E briefing is a joint AFOTEC/RTO presentation. The RTO is lead for the T&E briefing up to

and including Certification of Readiness for Dedicated OT&E. AFOTEC assumes lead after certification. Items briefed will vary depending on where the program is in the acquisition process.

- During Phase I - The briefing should cover the overall test and evaluation strategies including DT, CT, and OT&E
- During Phase II - The briefing should cover the results of testing to date.
- During Phase III - The briefing focuses on the results of testing in terms of effectiveness and suitability to meet the users need and plans for deficiency resolution.
- For program reviews - Briefing content should be adjusted to support the review

4.6.2. Final Report Briefing Requirements. Test Directors may not have sufficient time to publish final reports, and may use formal briefings to supplement major milestones or decision points. Testers will summarize OT&E results in an executive-level presentation.

4.6.2.1. For all test programs:

- The test director will brief results of the test effort to the developer. The developer, in turn, will recommend solutions or alternatives to problems identified during the test.
- The test director provides a tailored briefing to the using MAJCOM

4.6.2.2. For OSD-Oversight and HQ USAF directed test programs, the Test Director and a SPO representative will present a combined briefing focusing on both the problems and required fixes to HQ USAF/TE, SAF/AQ, and appropriate Air Staff offices. In addition, for OSD-Oversight programs, HQ USAF/TE will approve the briefing for presentation to OSD/DOT&E. Briefers will structure their presentation to include:

- Significant results and conclusions
- Recommendations
- Deficiencies and corrective actions
- Planned future tests

Chapter 5

RESOURCES

5.1. Modeling and Simulation. Maximum use of M&S will be made to assist in test planning and execution. Where feasible, M&S will be used to predict test results and to better understand test parameter sensitivities. M&S will also be used to the maximum extent possible in test execution to ensure an efficient OT&E program. Specific uses of M&S will be discussed as part of the test concept for each major program. When feasible, the test concept should include appropriately balanced modeling, simulation, and field testing.

5.2. Test Resources Planning. Operational testers must plan for all the resources necessary to conduct OT&E. Test resources are program unique and include test articles, funds, personnel, facilities, support assets (i.e. aircraft), and M&S. The operational testers, in conjunction with the single manager, are responsible, through the TPWG process, for determining test resources required for each program. Single managers will acquire or develop resources that do not exist. Test organizations must identify their resource requirements in sufficient time to permit inclusion in the TEMP.

5.3. Test Resource Acquisition Process. The PEOs and Air Staff provide guidance and management of test resource acquisition. Resource identification, programming, budgeting, and appropriation are integral parts of test planning and weapon system development. Test Investment Planning and Programming (TIPP) Process, and the Central Test and Evaluation Investment Program (CTEIP) facilitate the acquisition of test resources. Refer to AFI 99-109, *Test Resource Planning*, for more information.

5.4. Resource Usage. Testers must plan and conduct tests to take full advantage of existing or programmed Air Force test resources. Testers should reuse test assets when possible. Testers will, in the TEMP, identify the use of DoD or other government resources when suitable Air Force test resources are unavailable. Use of non government test resources must be justified in the TEMP. Testers requiring use of NASA facilities must submit a request through the appropriate Air Force liaison office.

5.5. Commonalty and Interoperability. New T&E resources must comply with standards and architectures established for interoperability and commonalty as well as existing reliance agreements. The Test Director must establish provisions for the protection of design technologies and operational capabilities. Refer to: Department of Defense Directive (DODD) 4630.5, Department of Defense Instruction (DODI) 4630.8, and Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6212.01.

5.6. Test Range Requirements. Test planners will identify all test range requirements as early as possible. Ranges and centers are subject to DoD uniform funding policy and require documentation of test requirements. Submit a program introduction document (PID) to provide advanced range scheduling, and identify new range capabilities required. Consider all potential test sites before final selection. Test range users document range support requirements using the Universal Document System (UDS) for ranges that access UDS. Refer to UDS Handbook 501-79 for format information, available from WSMR/STEWs-NRP, White Sands Missile Range, New Mexico 88002.

5.7. OT&E Funding. OT&E funding includes two types of appropriations, 3600 and 3400 funds. The type of OT&E determines which type of appropriation is used. IOT&E funding (3600 money) is programmed and budgeted by AFOTEC. QOT&E and FOT&E funding (3400 money) are programmed and budgeted for by the command responsible for test conduct. Test planners must provide timely requirements to the MAJCOM T&E or budget office to meet budget submission dates (usually 24 to 30 months before the fiscal year involved). Budget planners will then include these requirements in the MAJCOM's O&M budget and POM submission. When OT&E resource requirements change significantly, resource managers must take action to assure timely OT&E budget support can be provided. Refer to: AFI 65-601, Volume 1, *US Air Force Budget Policies and Procedures*.

HOWARD W. LEAF, Lt Gen, USAF (Retired)
Director, Test and Evaluation

ADDITIONAL ACQUISITION AND TEST RELATED PUBLICATIONS

Joint Pub 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 1 May 1988

DoD Directive 4630.5, *Compatibility, Interoperability, and Integration of Command, Control, Communications, and Intelligence (C3I) Systems*, 12 November 1992

DoD Instruction 4630.5, *Procedures for Compatibility, Interoperability, and Integration of Command, Control, Communications, and Intelligence (C3I) Systems*

DoD Directive 5000.1, *Defense Acquisition*, 23 February 1991

DoD Instruction 5000.2, *Defense Acquisition Management Policies and Procedures*, 23 February 1991

DoD Directive 5000.49, *Defense Acquisition Board*, 11 September 1989

DoD STD 2167, *Defense System Software Development*

Title 10 US Code

NSACSS Circular 80-17, *System Test, Evaluation and Transition*

AFI 10-602, *Determining Logistics Supportability and Readiness Requirements*

AFI 10-1011, *Information Security Program*

AFI 10-1202, *Space Test Program (STP) Management*

AFI 14-208, *Intelligence Support to the Air Force Acquisition Process*

AFI 16-301, *US Air Force Priority System for Resources Management*

AFI 16-501, *Control and Documentation of Air Force Programs*

AFI 21-101, *Air Force Management Maintenance*

AFPD 21-2, *General Policy for Nonnuclear and Nuclear Munitions*

AFI 21-201, *Inspection, Storage, and Maintenance of Nonnuclear and Nuclear Munitions*

AFI 33-104, *C4 Systems Base Level Planning and Implementation*

AFI 33-117, *Visual Information (VI) Management*

AFI 33-208, *Classification Guide for COMSEC and TEMPEST Information*

AFMAN 37-139, *Records Disposition -- Standards*

AFI 61-202, *Air Force Technical Publications Program*

AFI 62-201, *Systems Survivability*

AFI 63-104, *Aircraft-Stores Certification Program (Seek Eagle)*

AFI 91-202, *The US Air Force Mishap Prevention Program*

AFI 91-204, *Investigating and Reporting Mishaps*

AFI 91-205, *Nonnuclear Munitions Safety Board*

AFPD 99-1, *Test and Evaluation Process*

AFI 99-101, *Developmental Test and Evaluation*

AFI 99-103, *The Air Force Test Process*

AFI 99-105, *Live Fire Test*

AFI 99-106, *Joint Test and Evaluation*

AFI 99-108, *Programming and Reporting Missile and Targets in Test and Evaluation*

AFI 99-109, *Test Resource Planning*

MIL-STD-882B, *System Safety Program Requirements*

MIL-STD-1472, *Human Engineering Requirements for Military Systems, Equipment, and Facilities*

T.O. 00-35D-54, *USAF Material Deficiency Reporting and Investigation System*

OT&E PLAN FORMAT

1. GUIDELINE-OT&E Plan Format
2. OT&E Plan Contents (see figure A2.1.).

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1.2.2 Operational Concept	
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Figure A2.1. Test Plan Contents.

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V REPORTING	
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OPTIONAL SUPPLEMENTS	
A INTELLIGENCE AND THREAT ASSESSMENT (CLASSIFIED)	
B OPERATIONS SECURITY	
C CLASSIFIED EVALUATION CRITERIA	
D DETAILED SYSTEM DESCRIPTION	
E NOT USED	
F NOT USED	
G SOFTWARE EVALUATION	
H HUMAN FACTORS	
I WEATHER	
J MODELING & SIMULATION	
GLOSSARY OF TERMS	
REFERENCES	
DISTRIBUTION	

Figure A2.2. Test Plan Contents (continued).

SECTION I - INTRODUCTION

1.0 GENERAL. Discuss why the test is being conducted (to support a production decision, to support preplanned product improvement, etc.), who will conduct the test, and when and where it will occur. Also discuss how the OT&E effort fits into the system's acquisition cycle and procedures for revising the plan as both system and test approach maturity.

1.1 System Information.

1.1.1 Background. Briefly introduce the acquisition program, reason for the program (whether it is to replace or upgrade a system), the acquisition category, and previous OT&E. Identify any important deficiencies or problem areas (including testing not accomplished) from previous T&E. Cite the authority for OT&E, its priority

and precedence, and any decision milestones that the OT&E will support. List other relevant program documents (e.g., MNS, ORD, PMD, TEMP, COEA, ADM). Provide relevant information drawn from OT&E and OT&E-related activities to date (e.g., OAs, OUEs, Operational Feasibility Demonstrations, and other unique, program-specific activities).

1.1.2 Description. In this section, trace development of the new system to the current model and identify: the proposed system, how it works, its major interfaces, whether it must operate in a high-threat environment, how many units the Air Force might need, which command and type of personnel will operate it, any known unique maintainability issues, and most importantly, the primary mission. Provide enough information to enable personnel unfamiliar with the system to understand the COIs.

- Briefly describe the system to be tested. Consider the use of photographs and diagrams.

- If appropriate, describe how the system or subsystem interoperates with and relates to other systems.

- If applicable, identify different types of systems in which a subsystem will be installed and identify interfaces with the outside world, stating the source of its wartime tasking. Include the names of the contractors doing concept exploration and designs, major trade studies that are being conducted on the program. Include the SPO's assessment of the program technical risk, the management strategy for system development, and photographs, drawings, or sketches of the primary system components. Also address program competition and identify source selection sensitive (SSS) information.

- Describe flight profiles (if applicable), operations, and existing procedures being modified. List significant characteristics of the test item (performance, size, capability, etc.). Identify known differences between the test item and anticipated production hardware.

- Identify locations where testing will be conducted and planned test deployments. Provide rationale for particular test area or range selection.

1.2 OPERATIONAL ENVIRONMENT. Briefly summarize threat, operations concept, maintenance concept, and general training requirements developed by the operating command. Summarize software support concept or plan (when applicable) if not included in the maintenance concept.

1.2.1 Threat Summary. Highlight the current and postulated threats the system will encounter from IOC

through IOC plus 10 years and against which the system should be tested. This is an integral part of the OT&E plan. It may consist of a short, unclassified summary paragraph in the body of the plan and an additional classified supplement. When appropriate, the executive summary of the STAR may be used. In rare cases, only the unclassified paragraph will be necessary. If a supplement is used, it will generally contain several sections: a listing of significant system particulars, a brief system-specific threat summary, threat-related documentation deficiencies, a listing of the most significant threats, coverage of the projected threat environment, and a bibliography of the available pertinent threat documents.

1.2.2 Operational Concept:

- Describe the primary mission scenarios and wartime use of the system as stated in the ORD, COEA, MNS, PMD, TEMP, and messages. This may include primary and alternate missions, system interfaces, day or night sortie rates, surge rates, accuracy, system and weapons numbers, altitudes, profiles, duration, hours per day, numbers of operators, dormancy, shelf life, durability, typical environment, etc.

- Possibly include in this section one or more drawings to graphically portray to the reader how the system will be used in an operational environment.

1.2.3 Maintenance Concept:

- Briefly describe the user's maintenance philosophy for peacetime and wartime environments (if different) as stated in the ORD.

- As a subset of the maintenance concept, briefly describe the concept for depot-level system support.

1.2.4 Training Concept. State who will define and develop training given to personnel operating and maintaining the system when it becomes operational. List the numbers of O&M personnel, skill levels, and training required by HQ Air Education and Training Command (AETC) and the operating command. Address training requirements not presently available in the US Air Force, training media/equipment required, facilities, simulators, and resources needed to fill those requirements. Identify location, duration, and source of all AETC, MAJCOM, host base, and unit-administered training. State the outcome (skill level achieved, number of graduates per month) of each course.

1.3 PROGRAM STRUCTURE:

- Briefly describe or show the developer's acquisition strategy from concept exploration through production and deployment. Discuss how program integration will impact OT&E. If applicable, address when source selection will occur and whether it will restrict information release and program meetings. Identify program risks and how they are being mitigated. Highlight areas of concern where DT&E could affect system certification and OT&E. Discuss whether the required contractual provisions to support OT&E are in the statement of work (SOW) and the contractor's test plans. Describe the intermediate levels of performance and capability that will be used to document the development process (i.e., growth process). Include pertinent information drawn from OT&E and OT&E-

related activities to date or planned. Also include relevant items from the TEMP program summary.

- List known or projected program, test, and production events such as OAs, major DT&E or OT&E events and start/stop dates, meetings of decision-making bodies, and milestones supported. Describe each OT&E-related activity and the M&S strategy/plan. Is there adequate time for testing and reporting? Will production representative test articles be available for dedicated IOT&E? List any OT&E-related activities planned, e.g., OAs, operational utility evaluations, operational feasibility demonstrations, and other unique, program-specific activities. Provide a description of those activities.

SECTION II - OT&E OUTLINE

2.0 CRITICAL OPERATIONAL ISSUES AND OBJECTIVES:

- List COIs. Explain why these issues are critical to this program. Explain how they were derived and relate them to validated requirements documents. New COIs may surface at any time--even during testing. Test planners should validate and update issues during test planning and conduct.

- List the OT&E objectives and each COI they support. OT&E objectives will be used as organization and planning tools. OT&E objectives will be statements of areas to be examined, e.g., "rapid on/off-load," or "capability to engage and defeat enemy aircraft."

2.1 SCOPE AND TEST CONCEPT:

- Provide a test overview and how the test is structured to collect the information needed to answer the question of system operational effectiveness and suitability.

- List pertinent aspects of separate or combined tests; field tests versus simulations; use of modeling; methods of verification, validation, and accreditation for modeling and simulation; and prioritization of test events and test planning assumptions. If the OT&E is part of a combined or multiservice test program, discuss the Air Force OT&E effort.

- A test concept summary table (figure A2.3.) may be used to group information such as: the test phase, existing test capabilities, outcome expected for that phase of testing, and COIs which will be answered.

TEST PHASE	TEST CAPABILITY TO BE USED	OUTCOME	
<div>DEES SIMULATION</div> <div>3 SCENARIOS</div>	THREAT DENSITY ADVANCED THREATS LIMITATION: ARTIFICIAL CONFIGURATION (SEE SUP B FOR SPECIFIC THREATS)	IDENTIFICATION RESPONSE TIME PRIORITIZATION MULTIPLE SYMBOLS	COI-1
<div>NELLIS 10 SORTIES</div> <div>EGLIN 10 SORTIES</div>	OPERATIONAL CONFIGURATION CONTROLLED THREATS INSTRUMENTED EC RANGE OPERATIONAL PROFILES LIMITATIONS: THREAT DENSITY ADVANCED THREATS (SEE SUP B FOR SPECIFIC THREATS)	IDENTIFICATION RESPONSE TIME PRIORITIZATION MULTIPLE SYMBOLS DISPLAY RANGE AZIMUTH ACCURACY SYMBOL SPLITS MULTIPLE SYMBOLS RELIABILITY MAINTAINABILITY COMPATIBILITY/ INTEROP AIRCREW INPUT	COI-1 COI-2 COI-3 COI-4
<div>AVAILABILITY MODEL</div>	SENSITIVITY ANALYSES UNLIMITED RUNS	AVAILABILITY	COI-3

Figure A2.3. Test Concept Summary Table.

d. Test summation matrix (figure A2.4.). This matrix provides the reader with an overview of the relationships between COIs and user requirements, events, scenarios, and resources. It can be used by test managers or test directors as part of the internal briefings accomplished before test plan or test execution approval.

SCENARIO	TOD	ALT	FORMATION	UNK/ENEMY AIRCRAFT	SORTIES	THREAT	RESOURCES	INSTRUMENTATION	COIs
1	DAY	LOW	1		34	2 SA-X2 3 SA-X9	6 F-4 2 A-10 4 F-111	IMPACT GRID	1, 2
2	DAY	HIGH	2V	8/4	8	GROUND JAMMER	6 F-4 2 A-10 4 F-111	FCC VAN	2
3	DAY	MED	2V	8/4	28	AIRBORNE JAMMER	6 F-4 2 A-10 4 F-111	FCC VAN INSTRUMENT POD	1, 3
4	DAY	LOW	4V	4/8	19	2 SA-X2 3 SA-X9	6 F-4 2 A-10 4 F-111	INSTRUMENT POD	2, 3
5	DAY	HIGH	2V/CARRIER	4/8	6	ALL	6 F-4 2 A-10 4 F-111	INSTRUMENT POD	3, 4
6	NIGHT	MED	2V		34	2 SA-X2 3 SA-X9	6 F-4 2 A-10 4 F-111	IMPACT GRID	1, 2, 4
7	NIGHT	LOW	2V	8/4	8	AIRBORNE JAMMER	6 F-4 2 A-10 4 F-111	FCC VAN	1, 2
8	NIGHT	HIGH	2V	8/4	28	GROUND JAMMER	6 F-4 2 A-10 4 F-111	FCC VAN INSTRUMENT POD	1, 4
9	NIGHT	MED	4V	4/8	19	2 SA-X2 3 SA-X9	6 F-4 2 A-10 4 F-111	INSTRUMENT POD	1, 3
10	NIGHT	LOW	2V/CARRIER	4/8	6	ALL	6 F-4 2 A-10 4 F-111	INSTRUMENT POD	3, 4

Figure A2.4. Test Summation Matrix.

2.2 PLANNING CONSIDERATIONS AND LIMITATIONS.

2.2.1 Planning Considerations. State assumptions or factors that significantly affected test concept or scope. Include areas that require workarounds but will allow the test to be successfully completed. Also include areas that require additional management attention to ensure a successful test.

2.2.2 Limitations. List factors, for which no suitable workaround exists, limiting the ability of the test to address operational requirements. State the impact of these limitations on the test team's ability to verify achievement of operational requirements.

2.2.3 Estimated Cost. Provide a cost estimate addressing the planning, executing, analysis, and reporting of OT&E.

2.3 SYSTEM CONTRACTOR INVOLVEMENT. Describe how the system contractor will not influence the combined phase and dedicated phase of OT&E supporting a full-rate production decision.

2.4 OT&E SCHEDULE AND READINESS REQUIREMENTS:

- Show planned testing versus testing completed to date. Discuss dates of key test planning events, briefings, test readiness events, internal reviews, Joint Reliability and Maintainability Evaluation Team (JRMET), and other relevant events.

- Highlight those events, actions, and items which must be in place or accomplished before testing begins including: significant DT&E events, certification for dedicated OT&E, training, support equipment, software and technical data verifications and validations, and facility completion.

- Summarize major resource requirements for agencies participating in the OT&E. Identify major required support items such as: personnel, ranges, automatic data processing, training, aircraft, and equipment.

- Refer to the current resource plan for operating and supporting command resource requirements, to the current TEMP for implementing command resource requirements, and the SOW for contractor resource requirements.

SECTION III - METHODOLOGY

3.0 GENERAL.

3.0.1 COI Summary. Present a COI-by-COI summary of the test. Briefly describe what test events are planned and their integration. Consider using flow charts, block diagrams, or matrices to show the relationships between various T&E events and major inputs and expected outputs of each event.

3.0.2 COI and MOE/MOP Matrix. A matrix can be used to show the relationship between a large number of COIs, MOEs, and MOPs.

3.1 COI-1. State the COI.

3.1.1 Scope. Describe, in general terms, testing required (number of sorties, etc.) to answer the COI. State areas to be examined (terrain-following capability, etc.) to gather data.

3.1.2 Measures of Effectiveness/Performance and Evaluation Criteria. List the MOEs/MOPs, associated evaluation criteria, and the document from which the requirement was extracted. More than one MOE/MOP may apply to a COI. An MOE will have a two-digit identifier relating it to the COI it supports. The first digit

is the number of the COI; the second indicates the MOE's sequence in support of the COI. An MOP will have a three-digit identifier. The first digit is the number of the COI, the second indicates the MOE it supports, and the third indicates the MOP's sequence in support of the COI.

3.1.3 Mission Scenarios. Include descriptions or diagrams of representative mission scenarios or the proposed outlines of test events, indicating if they are to be actual missions, captive-carry flights, missile shots, etc. Scenarios listed here should be those that are critical to determining mission capability. When the same scenario is used for more than one COI or is discussed in section II, it may be referenced in this section.

3.1.4 Method of Evaluation. Describe how data will be collected and how results associated with the MOE and MOPs will be combined to produce an answer for each COI. Present a sequence of events that logically leads to and supports the rating. If the aggregation methodology in this paragraph is used for other COIs, reference this paragraph.

3.2 COI-2. Continue as above.

3.X SURVIVABILITY ASSESSMENT:

a. If survivability is a major program concern as indicated by PMD or operational requirement, address it as a COI. If survivability is not a major issue, but the OT&E team plans to provide information about system performance and characteristics that affect survivability, address it in a separate paragraph much like a COI, after all COIs have been addressed. If MOPs are used for the assessment, discuss them as stated above.

b. Identify the type of information to be reported. State where data will be collected in support of the

survivability assessment. Explain how the assessment is an examination of the impact of system characteristics and performance on survivability. This assessment will involve the use of all available data including specifically designed field testing, laboratory testing, intelligence estimates, vulnerability analyses, and simulation and modeling results. Outline test activities that will provide the assessment. For the survivability assessment, it may be possible and necessary to enlist support from outside agencies in conducting an analysis that identifies the primary factors applicable to a system's survivability.

SECTION IV - ADMINISTRATION

4.0 TEST MANAGEMENT. List the agencies involved in the test and summarize their responsibilities and relationships.

4.1 TASKING. Identify the implementing, operating, participating, and supporting organizations that have a direct input to test planning or conduct. Identify the test director and key staff by organization and office symbol. Include a test team organizational chart. Outline test team chain of command and individual responsibilities for scheduling test resources.

4.2 TRAINING REQUIREMENTS. Identify test team training requirements to include: operator, maintenance, and specialized training (i.e., Type 1 training (AFI 36-2201, *Developing Military Training Programs*), analyst, data base, computer programming, contractor-provided systems training, etc.). Specify how and by whom these requirements will be satisfied to include a schedule for the planned training.

4.3 SAFETY. Ensure that required statements contained in AFI 91-202, *The US Air Force Mishap Prevention Program*; AFI 91-204, *Investigating and Reporting Mishaps*; Military Standard (MIL-STD) 882, *System Safety Program Requirements*; and/or other applicable MIL-STDs or instructions are included.

4.4 ENVIRONMENTAL IMPACT. Normally, the implementor files an environmental impact statement for DT&E. Depending on DT&E location and planned operational environment, use and reference this statement as required. Where DT&E and OT&E locations are different, include a separate statement to describe the differences and impact caused by OT&E (reference AFD 32-70, *Environmental Planning*). Contact the local environmental coordinator for the test location when a separate statement is needed or when the environmental impact statement for the test program is inadequate. The environmental coordinator is a part of the civil engineering community and can provide the expertise to determine the impact of the program, if any, on the

environment. Operational test agencies are required to comply with all federal, state, and local environmental statutes when conducting OT&E. The OT&E plan must contain one of these statements:

"The OT&E will be conducted in conjunction with (program name), and environmental impact is covered by (implementing agency) statement (identify statement)."

"All pertinent environmental factors have been considered, and this headquarters has determined that the planned OT&E will present minimal hazards to the environment."

"This (state either headquarters, command, or agency) has determined that conducting this OT&E will have no adverse effects on the environment."

4.5 SOURCE SELECTION INFORMATION. Refer to AFI 37-131, *Air Force Freedom of Information Act Program*. List any deviations or exceptions.

4.6 SECURITY.

4.6.1 Information Protection.

4.6.1.1 Classified Information. Identify by name and date all security classification guides governing classification of information relating to the system and test program. Identify any security master or program protection plans having applicability to the system or test program. Also state that classified information will be safeguarded and protected according to the provisions of DOD 5200.1-R, *Information Security Program Regulation*, and its supplements.

4.6.1.2 Unclassified Information. Identify applicable protection measures for unclassified information. System acquisition program protection plans will identify "Critical Information" requiring protection. Supplement B, Operations Security (OPSEC) Plan, to this OT&E plan,

also identifies the Critical Information protection requirements.

4.6.2 Communications Security (COMSEC). When there is a need to have a supporting COMSEC Account (controlled cryptographic items) identify the supporting COMSEC manager in this section. COMSEC monitoring applies to all DOD telephones and similar communications devices that, if considered appropriate, may be identified in this section.

4.6.3 Control of Compromising Emanations (TEMPEST). Identify equipment requirements for processing classified information by area or location. Identification of any TEMPEST countermeasure applied to the specific equipment may cause the information of this section to be classified in its own right, and that should be avoided when possible.

4.6.4 Physical Security. When applicable, identify any special physical security requirements applying to the test. Refer to AFI 31-209, *Air Force Resource Protection Program*, and AFI 31-101, *Air Force Physical Security Program*.

4.6.5 Operations Security (OPSEC). Most acquisition programs have OPSEC requirements applied by a separate directive, Security Master or Program Protection Plan, and that directive or plan should be identified in this section. Also, use one of the following statements in the OT&E plan.

- "This program is susceptible to foreign intelligence exploitation wherein classified or unclassified critical information (also known as Essential Elements of Friendly Information (EEFI)) could be compromised. Refer to Supplement B for application of OPSEC to this OT&E test program."

- "This program has been determined to be unsusceptible to foreign intelligence exploitation."

4.6.6 Security Awareness. Identify any special awareness or educational requirements desired by the test director or test manager or mandated in related security directives. Also insert "Security indoctrination and recurring training will be consistent with the provisions of DOD 5200.1-R and its implementing supplements. When applicable, OPSEC training, to include a discussion of critical information and protective measures, will be part of any initial or annual security indoctrination training."

SECTION V - REPORTING

5.0. **REPORTS.** This section outlines the report requirements. Specifically identify: timing of reports, writing responsibilities, addressees, format, content, and transmission means. Give special consideration to distribution of OT&E reports ensuring OT&E-related information is released to agencies with a valid need-to-know.

- STATUS REPORT
- SIGNIFICANT TEST EVENT REPORT
- ANNUAL REPORT
- INTERIM SUMMARY REPORT
- FINAL OT&E REPORT

5.1 **BRIEFINGS.** Identify briefings required before, during, and after OT&E. Include a short narrative on the content and intended audience of all briefings.

5.2 **DEFICIENCY REPORTS (DR).** Describe how deficiencies and proposed enhancements discovered during OT&E will be validated, reported and managed per TO 00-35D-54, *USAF Material Deficiency Reporting and Investigation System*. At a minimum, the description should address the duties and responsibilities of the DR monitor, including attendance at MIP boards, the overall management of the DR process, and the procedures for prioritizing DRs.

3. **OT&E Plan Supplements.** Supplements should contain detailed information supporting the body of the plan. The number and type of supplements used are program dependent. Supplements can also be used to "extract" classified material from the test plan body to simplify handling procedures. The format will vary depending on program specifics such as the number of COIs, MOEs/MOPs, etc. Some commonly used supplements and their outlines follow.

SUPPLEMENT A - INTELLIGENCE AND THREAT ASSESSMENT**A.0 GENERAL.**

A.1 OPERATIONAL ENVIRONMENT. Describe how the system's environment (altitude, penetration of enemy airspace, etc.) subjects it to various threats.

A.2 ENEMY DOCTRINE. Describe how the enemy would view the importance of the system. Describe doctrine and general strategies likely to be employed to defeat the system.

A.3 THREATS. List enemy threat systems in categories (e.g., air-to-air, surface-to-air, directed energy, etc.).

A.4 THREAT-RELATED COIs. List those COIs that are threat-driven here.

A.5 CRITICAL INTELLIGENCE PARAMETERS (CIP). Not all threat assessments will have this section. CIPs are identified by the intelligence community and listed in the System Threat Assessment Report (STAR). They are on a watch list of key systems or tactics that would have significant bearing on the threat assessment. If the intelligence estimate regarding a CIP changes, it could impact the overall threat assessment for the blue system being developed.

A.6 BIBLIOGRAPHY. List sources used in the supplement as well as additional reference material.

SUPPLEMENT B - OPERATIONS SECURITY (OPSEC)**B.1 PURPOSE.**

B.2 CRITICAL INFORMATION or ESSENTIAL ELEMENTS OF FRIENDLY INFORMATION.

B.3 ASSESSMENT OF THE INTELLIGENCE THREAT. Identify specific intelligence collection threats. Signals intelligence (SIGINT), imagery intelligence (IMINT), human intelligence (HUMINT), or an all-source multi-discipline collection effort may form the intelligence threat for any OT&E plan. Test managers should seek the assistance of OPSEC program managers, security planners, AFOSI representatives, and intelligence program managers, in developing this section.

B.4 OPSEC VULNERABILITY ANALYSIS. Identify all possible OPSEC vulnerabilities, which is any condition where friendly actions produce indicators that may be collected and evaluated in the intelligence collection process.

B.5 OPSEC PROTECTIVE MEASURES. Identify OPSEC training/awareness requirements and insert each protective measure along with its implementing guidance.

B.6 OPSEC LESSONS LEARNED. The test team will document OPSEC lessons learned during the test and immediately forward them to the OPSEC officer for appropriate staffing. They are included in the final OT&E report.

SUPPLEMENT C - CLASSIFIED EVALUATION CRITERIA

This supplement should contain classified evaluation criteria to be used during OT&E.

SUPPLEMENT D - DETAILED SYSTEM DESCRIPTION

This section contains additional system description information necessary to supplement the OT&E plan.

SUPPLEMENT G - SOFTWARE EVALUATION

A separate software supplement may be required to provide specific guidance to the test team deputy for software evaluation.

G.1 GENERAL.**G.1.1 Scope.****G.1.1.1 System Effectiveness Evaluation.****G.1.1.2 System Suitability Evaluation.****G.1.2 Software Description.****G.1.3 Limitations of the Software Evaluation.****G.1.4 Software Evaluation Management.****G.1.4.1 Software Evaluation Organization.**

G.1.4.2 Responsibilities.

G.1.5 Software Support Concept.

G.2 SOFTWARE SUPPORT TO SYSTEM EVALUATION. This portion of the software evaluation supplement lists those COIs and/or MOEs/MOPs supported by the software evaluation.

G.2.1 Method. Describe how software evaluators will participate during the test.

G.2.2 Data Management.

G.2.2.1 Data Requirements. Briefly describe the source for every data item.

G.2.2.2 Data Collection and Processing. Summarize the format, labeling, routing, and filing to be done for each data source.

G.2.2.3 Data Analysis. Discuss data analysis techniques to be used by software evaluators.

G.2.3 Evaluation. Discuss the evaluation techniques or procedures to be used. Explain how the software evaluation results are to be combined with other OT&E results to determine system performance.

G.3 ADDITIONAL SOFTWARE EVALUATION.

SUPPLEMENT J - MODELING AND SIMULATION

J.0. PURPOSE. Brief statement of why supplement is required.

J.1 OVERVIEW. Summary narrative of overall supplement.

J.2 PROGRAM M&S STRATEGY. Brief synopsis of weapon system acquisition strategy with emphasis on the role of M&S.

J.3 M&S APPROACH. Most important part of supplement. Includes description and supporting rationale for M&S use as applied to requirements definition/analysis, research and development, test and evaluation, training and operations. Describe how M&S has been and/or will be employed throughout the program by government and/or contractor activities; Describe

verification, validation, and accreditation (VV&A) methods and processes.

J.4 RELATED M&S ACTIVITIES. Describe supporting and/or related M&S efforts and how they will be used by this program. Include supporting data requirements for M&S.

J.5 MANAGEMENT. Include wiring diagrams. POCs for the M&S activity of the program.

J.6 FACILITIES/EQUIPMENT REQUIREMENTS. Include description of government/contractor hardware, software and facility requirements.

J.7 SUPPLEMENTAL INFORMATION. Include miscellaneous related information. Test Manager comments.

OT&E REPORT FORMAT

1. Guidelines for OT&E Report Format.

2. OT&E Report Format and Contents. This section outlines the preferred format and content for a final OT&E report.

2.1. Final Report Cover. The cover must contain the information shown in figure A3.1. Use red cover for classified reports. Mark all classified test documents according to DoD 5200.1-R; AFPD 31-4, *Information Security*; and AFI 31-401, *Information Security Program Management*. When both the title and the entire report are unclassified, markings are not required. If the document contains restricted information (for example, restricted data, not releasable to foreign nationals), mark the cover accordingly. Since colored pages will not microfilm legibly, leave the reverse side of the cover blank.

2.2. Title and Signature Page. A sample is presented in figure A3.2. The title page must repeat all the identification and markings found on the front cover. Do not print on the reverse side of a colored cover.

2.3. Report Documentation Page. Attach SF 298, *Report Documentation Form*, to reports submitted to the Defense Technical Information Center (DTIC). The entries in blocks 13 (abstract) and 14 (subject terms) are important for proper control and release of the document. For example, if the report concerns the OT&E of a jet fighter engine with thrust reversal capability, logical *Subject Terms* might include: "jet engine," "fighter aircraft engines," "thrust reversal," "exhaust nozzles," "thrust vectoring," or "short takeoff and landing (STOL)." The *Abstract* might mention: the type of test done (IOT&E, etc.), when and where the test was conducted, who the contractors were, or any piece of information that might be valuable to other DTIC users. Information in the report must be safeguarded, especially if it is of a proprietary nature or not universally releasable. Report

authors must carefully consider how information will be disseminated, even after the report has been distributed. Use the distribution limitation statements in AFI 61-204, *Controlling the Distribution of Classified and Unclassified Scientific and Technical Information*, in addition to the report documentation page entries to ensure the report is available only to people and offices with a valid need-to-know. To allow legible microfilming, do not reproduce this page on colored paper.

2.4. Report Contents. The report contents is shown in figure A3.3.

2.4.1. Figures and Tables. Provide separate lists by page number. Number all figures and tables consecutively throughout the sections. Use short and descriptive titles.

2.4.2. Abbreviations. Explain abbreviations and symbols so they are readily understood by the reader. The heading for this page will include only the applicable items; for example, if no symbols are included, the heading would be "ABBREVIATIONS".

2.4.3. Glossary. If necessary, provide a glossary of terms that may be unfamiliar to the reader. Common Air Force terms need not be defined.

2.4.4. References. If necessary, provide references.

2.5. Distribution. Send two copies of all final OT&E reports to DTIC. Other distribution requirements should include those agencies participating in the test and the history office of the conducting organization's headquarters.

2.6. Report Format. The remainder of this attachment illustrates the required format for a final OT&E report. Discuss COIs in the same order as presented in the plan.

UNCLASSIFIED

Project XXXX

PROGRAM NAME
IOT&E REPORT

DATE

Distribution authorized to DoD components only; critical technology (DATE). Other requests for this document shall be referred to HQ AFOTEC/RC, 8500 Gibson Blvd SE, Kirtland AFB, New Mexico 87117-5558.

WARNING - This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Section 2751, et seq.) or the Export administration Act of 1979, as amended (Title 50, U.S.C., Appendix 2401, et seq.). Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with the provisions of AFI 61-204.

DESTRUCTION NOTICE - For classified documents, follow the procedures in DoD 5220.22M, Industrial Security Manual, Chapter 5, Section 7 or DoD 5200.1R, *Information Security Program Regulation*, Chapter IX. For unclassified, limited documents, destroy by any method that will prevent disclosure of contents or reconstruction of the document.

Test Agency
Street Address
Base, State, Zip code

COPY _____ OF _____

UNCLASSIFIED

Figure A3.1. Format for OT&E Report Cover.

NOTE: WARNING and DESTRUCTION NOTICE are mandatory statements. Include distribution limitation statements for the type of information in the report. (See DoD 5230.25-PH, *Control of Unclassified Technical Data with Military or Space Applications*, for allowable distribution statements.)

(PROGRAM NAME)
INITIAL OPERATIONAL TEST AND EVALUATION FINAL REPORT
FINAL REPORT

APRIL 1994

Prepared by: GARTH BROOKS, Colonel, USAF
Test Director

HENRY WILLIAMS, JR, Major, USAF
Test Manager

Reviewed by: BILLY RAY CYRUS, Lt Colonel, USAF
Chief, Tactical Systems Division

Submitted by: LORETTA LYNN, Colonel, USAF
Director of Test and Evaluation

Approved by: CONWAY TWITTY,
Major General, USAF
Commander

*Distribution authorized to DoD components only; critical technology (date statement is applied to the document). Other requests for this document shall be referred to (include address of the test agency).

*WARNING - This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Section 2751, et seq.) or the Export administration Act of 1979, as amended (Title 50, U.S.C., Appendix 2401, et seq.). Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with the provisions of AFI 61-204.

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**NOT RELEASABLE TO FOREIGN NATIONALS (NOFORN)

**WARNING NOTICE - INTELLIGENCE SOURCES AND METHODS INVOLVED (WNINTEL)

**DISSEMINATION AND EXTRACTION OF INFORMATION CONTROLLED BY ORIGINATOR (ORCON)

**NOT RELEASABLE TO CONTRACTORS/CONSULTANTS (NOCONTRACT)

**CAUTION - PROPRIETARY INFORMATION INVOLVED (PROPIN)

Test Agency
Street Address
Base, State, Zip code

Figure A3.2. Format for Title and Signature Page.

Mandatory statements (see AFI 61-204)

Include security statements as appropriate (see DoD 5200.1R)

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	REFERENCES (if necessary)	
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	1 OPERATIONAL ASSESSMENT	
	2 EXECUTIVE SUMMARY OF PREVIOUS OT&E	

Figure A3.3. Format for OT&E Report Contents.

EXECUTIVE SUMMARY

The executive summary should summarize (ideally two pages, single spaced) the report and explain the OT&E and significant results. The executive summary should: briefly state the purpose of the OT&E, describe the item

tested and its purpose or mission, provide system background, summarize results by COI, summarize the status of service reports, and provide concluding remarks.

SECTION I - PURPOSE AND BACKGROUND

1.0 OT&E PURPOSE. Provide a concise statement of OT&E purpose.

1.1 AUTHORIZING DIRECTIVES. Cite the authority for the OT&E, its priority, and precedence. Identify program documentation such as the MNS, PMD, etc.

1.2 OT&E BACKGROUND. Provide a summary of previous OT&E of the system and important deficiencies or problem areas (including COIs not resolved) from those OT&Es. Identify the lack of previous test information.

1.3 DESCRIPTION OF SYSTEM TESTED. Describe the system tested. If differences exist, compare and contrast the system tested to the expected operational system.

1.4 TEST TEAM, LOCATION, AND DATES. Identify test team composition (including names of key personnel and average number of personnel assigned and attached) and operating locations (including ranges and test facilities). Use organization charts if available.

1.5 CLASSIFICATION STATEMENT. Identify classified material and declassification procedures (if applicable).

SECTION II - OT&E DESCRIPTION

This section contains a general overview of how the OT&E was conducted.

2.0 CRITICAL OPERATIONAL ISSUES. List critical operational issues. This list contains, in a single location, information reported throughout Section III. Indicate which COIs were resolved and were not resolved. The information is presented as a listing of each COI and MOE/MOP followed by a correlation matrix.

2.1 SCOPE AND METHOD OF ACCOMPLISHMENT. Provide an overview of how the OT&E was conducted. Write in the past tense.

2.2 PLANNING CONSIDERATIONS AND LIMITING FACTORS. Identify planning considerations that shaped the test design and factors limiting realism or affecting results. Discuss any testing that was not accomplished and any follow-on testing requirements.

2.3 CONTRACTOR INVOLVEMENT. For programs affected by Public Law restrictions on system contractor participation during the dedicated phase of OT&E, explain how involvement by system contractor personnel was controlled.

SECTION III - OPERATIONAL EFFECTIVENESS AND OPERATIONAL SUITABILITY

This section is the essence of the final report. It details the evaluation of the system tested, conclusions supported by specific results, and recommendations. The format for this section follows: paragraph numbering for Section III is designed so that paragraph 3.1 correlates to COI-1 and paragraph 3.2 correlates to COI-2.

3.0 SUMMARY. List the most important conclusions. When rating OT&E MOEs and MOPs, "met user criteria" describes performance that met or exceeded a stated mature requirement or interim criterion. "Deficient" describes performance that did not consistently meet a mature requirement or interim criterion. If performance

in a particular area was not tested, the results must be labeled "not tested." This section must focus the reader's attention on the most important events that influenced the ratings. Present all statistical data such as: missions, sorties and/or flying hours by participating aircraft, launches, and captive-carry time.

3.1 COI-1. State COIs, with answers, followed by the MOEs and MOPs and the rating associated with the each. MOEs may not have ratings depending on whether they had criteria.

3.1.1 Method. State the approach used to answer this COI. Include statistical data that enumerates: number of aircraft or other major equipment used, number of flying hours, communications link time, etc. Address different test locations separately. Separate the statistics that apply to combined DT&E/OT&E and to dedicated OT&E. When the same method used to test applies to a number of COIs, reference the paragraph first identifying the method.

3.1.2 Results and Conclusions. State facts and conclusions that logically follow, and can be supported by, specific test results. Highlight significant capabilities, advantages, and shortcomings of the system. Testers will list results associated with MOEs and MOPs in order of importance, not as they are listed in the OT&E plan.

3.1.3 Recommendations. State recommendations in the same order as discussed in the Results and Conclusions

paragraph. Ensure recommendations are logically based on the results. If testers have no recommendations, it must be noted. State the individual or agency responsible for action (HQ AFMC, other, MAJCOM, etc.). If the recommendation is associated with a major DR, also place the DR number in parentheses at the end of the recommendation paragraph (i.e. DR II-83001-ALOCF).

3.2 COI 2. Document additional COIs in the same manner as stated in paragraph 3.1.

3.X SURVIVABILITY ASSESSMENT. List test results and system characteristics that were found to have a bearing on system survivability.

3.Y ENVIRONMENTAL IMPACTS. List any results from test or analysis that would help the user develop an Environmental Impact Statement for system deployment and utilization.

SECTION IV - DEFICIENCY REPORTS

A major purpose of OT&E is to identify operational deficiencies and enhancements. This section of the final report should summarize the status of all open, awaiting fix verification, and closed DRs. The status for closed DRs will include who closed them and how they were verified. Include a prioritized list of DRs and summarize any proposed enhancements identified during OT&E.

4.0 DEFICIENCY REPORT STATUS. Summarize DRs in accordance with the categories in TO 00-35D-54.

a. Open. Program office actions have not started or are in progress.

b. Awaiting Fix Verification. Program office actions are complete, and the only remaining step is fix verification.

c. Closed. Chose not to fix, or fix is completed and verified.

d. Category I (Cat I). A deficiency that requires immediate corrective action because:

(1) The condition may cause death, severe injury, severe occupational illness, or major system damage or loss.

(2) The condition causes unacceptable delays in testing or prevents successful mission accomplishment (because of severity and frequency of the deficiency) and would critically impact the combat readiness capability of an operational unit.

e. Category II (Cat II). A deficiency condition that prevents successful mission accomplishment (system does not meet minimum operational requirements, but does not justify immediate corrective action in accordance with Cat I) or degrades a system's operational effectiveness and/or operational suitability.

4.1 IMPACT SUMMARY. Address the effect of identified DRs on the system and the test program.

4.2 DEFICIENCY REPORTS. Include a narrative statement addressing the method for prioritizing DRs. The test director will determine the number of DRs to be detailed in the report. When the total list is extensive, include only open Category I DRs and those Category II DRs that require additional visibility here. Include those DRs not addressed in an annex or data document.

SECTION V - SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

The format of this section is flexible and may be tailored to the requirements of the particular report. Use a numbering system similar to the other sections. Separate paragraph titles may not be needed when the report summary is provided in a short narrative. Following are examples of possible formats for the report summary:

Example 1

5.0 GENERAL
5.1 EFFECTIVENESS
5.2 SUITABILITY
5.3 CRITICAL ISSUES

Example 2

5.0 GENERAL
5.1 CONCLUSIONS
5.1.1 Effectiveness
5.1.2 Suitability
5.2 RECOMMENDATIONS
5.2.1 Effectiveness
5.2.2 Suitability
5.3 SUMMARY

Example 3

5.0 GENERAL
5.1 COI-1
5.1.1 Conclusions
5.1.2 Recommendations
5.2 COI-2

OT&E PLANNING WITHIN THE STRATEGY-TO-TASK FRAMEWORK

1. Nature of Planning. Planning must be comprehensive, structured, and based on the system's intended mission and operational tasks. It must also develop the rationale and actions to be followed during the test; outline the procedures for collecting, documenting, and evaluating the data collected; identify all required resources; and accurately communicate the proposed test program to approval authorities and other participants. Successful test planning culminates in an executable test plan and a complete audit trail back to the Defense Planning Guidance.

2. Purpose of OT&E Planning. Proper OT&E planning facilitates the acquisition of relevant data to determine weapon system operational effectiveness and suitability in support of system acquisition decision making. While careful planning will not guarantee a successful test program, inadequate planning may result in significant test shortfalls, cost and schedule overruns, and ultimately system failure.

3. A Framework for Planning. The "strategy-to-task" model shown in Figure A4.1. is a framework for test planners to link the system's specific operational tasks and missions to the national military strategy provided by the Joint Chiefs of Staff. Working from the top down in the hierarchy, national security strategy is supported by national military strategy, which in turn is supported by

various regional, or theater-level, strategies. These strategies are supported by regional operational objectives composed of one or more operational tasks or missions. Once the user defines the operational tasks and missions, then system performance parameters, system characteristics, and associated thresholds and objectives are determined and published in the ORD. The user, assisted by the tester, must also include in the ORD "testable" measures of effectiveness (MOE) and measures of performance (MOP) for objectively demonstrating system performance in operational test and evaluation (OT&E). The focus of operational testing is primarily on the bottom two tiers of Figure A4.1. For OT&E planning purposes, the term "operational task" is approximately equivalent to "the mission."

4. Linking OT&E to National Military Strategy. During early planning, test planners outline the scope and structure of OT&E activities in the context of the operational tasks defined in the strategy-to-task framework. Although OT&E activities are generally concentrated in the bottom two levels of Figure 4A.1, test planners must be prepared to link their test back to any level if required. To do this effectively, they must comprehend how the system functions within the entire hierarchical framework. Tests that are not well-linked will lack scientific rigor, operational relevance, and be incapable of answering senior decision makers' questions.

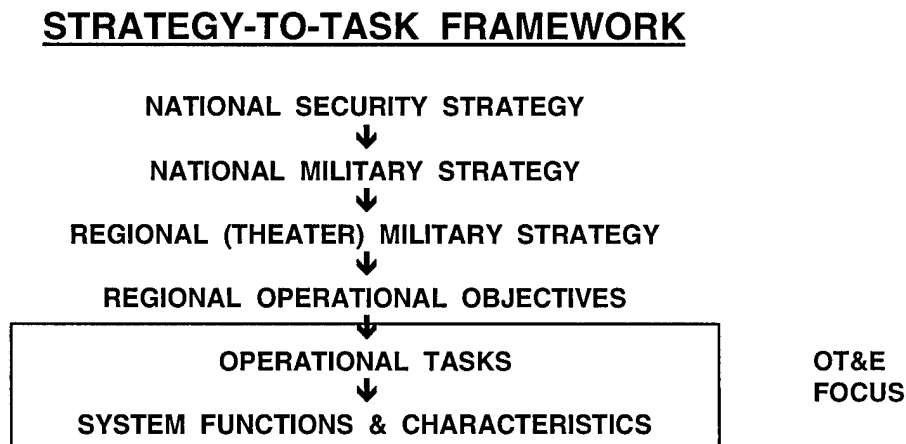


Figure A4.1. Strategy-to-Task Framework.

5. How Linking is Done. The cost and operational effectiveness analysis (COEA) provides the direct link between military strategies, tasks, and requirements in the MNS and ORD, and the determination of operational effectiveness and suitability in OT&E. Users, assisted by OT&E planners, determine in the COEA what it takes to make a difference in terms of engagement or battle outcome in order to judge between competing alternative systems. The measures of effectiveness (MOE) developed at the operational task level (or below) in the COEA should be the same ones used in the test concept and test plan.

5.1. A well-executed COEA includes MOEs reflecting operational effectiveness and suitability that can be objectively tested. An MOE is a measure of a system's performance or a characteristic that indicates the degree to which it (or operational task element) performs an operational task or meets a requirement under specified conditions. MOEs should be defined to enable testers to quantitatively measure the degree of operational task (or mission) accomplishment, but qualitative measures are also useful. MOEs should be developed to a level of specificity such that a system's effectiveness during

testing can be assessed with the same criteria used in the COEA.

5.2. Some MOEs in the COEA may not be testable in OT&E because they are measures of how well campaign- or regional-level strategies are accomplished. In these instances, users must develop more specific MOEs at the task level or below that are objectively measurable in test. MOEs are used singly or in combination in the test concept and test plan to answer the COIs which support senior-level decision making.

5.3. Measures of performance (MOP) are quantitative (or qualitative) measures of a system's capabilities or characteristics. They articulate the lowest levels of physical performance such as weight, speed, or range. MOPs should relate to MOEs such that the effects of a change in MOP can be related to a change in the MOE. Multiple MOPs may be aggregated to support an MOE or critical operational issue (COI), just as multiple MOEs may be aggregated to support a COI or operational task.

6. How Planning is Started. Test planners must first understand the system in terms of the strategy-to-task framework and the COIs as shown in Figure A4.2.

TEST CONCEPT & TEST PLAN DEVELOPMENT

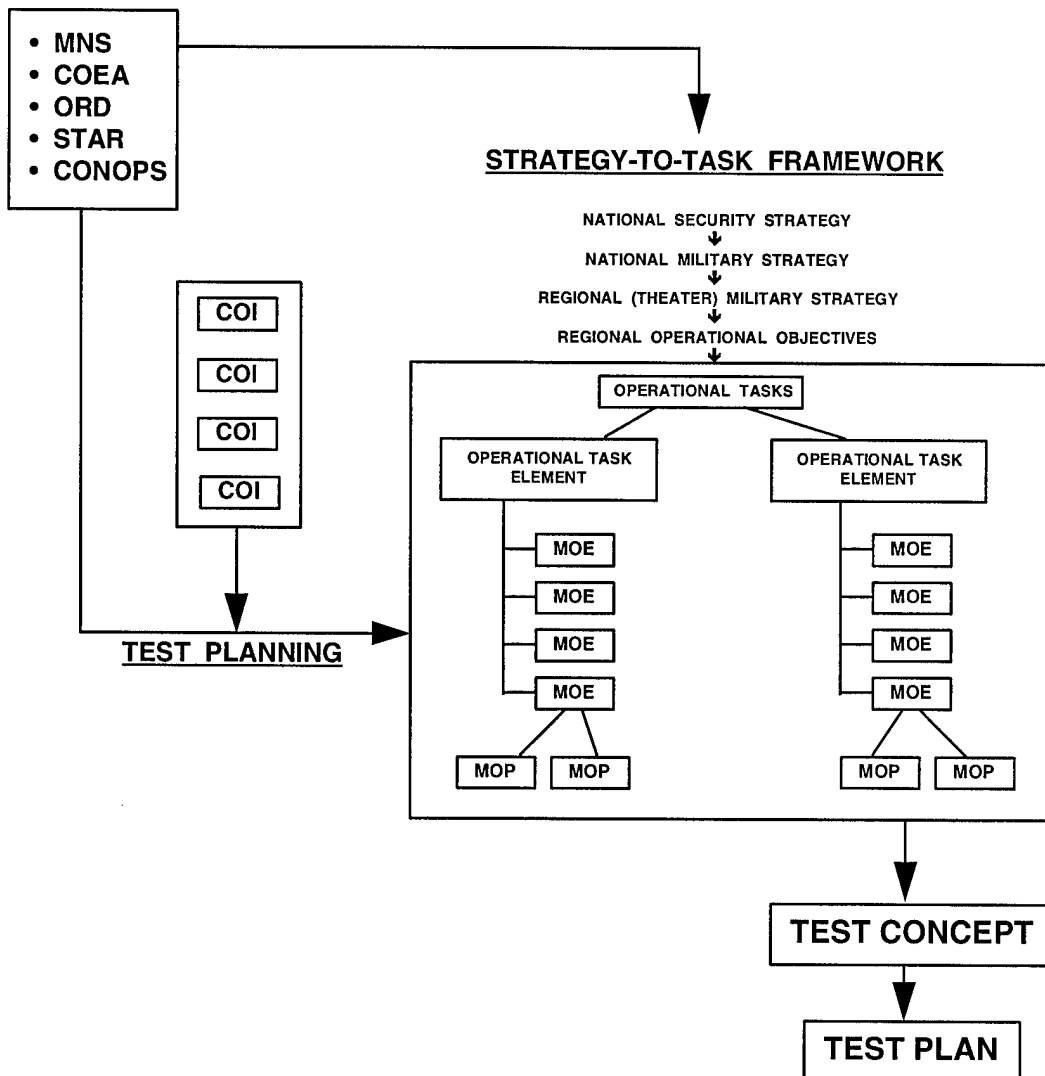


Figure A4.2. Test Concept and Test Plan Development.

6.1. Critical operational issues are key questions about the system which must be answered for senior decision makers. They are developed by the operating command with AFOTEC concurrence. They are extracted from any number of documents and sources and help test planners and decision makers focus on the real "show-stopping" concerns. COIs *influence* the overarching thrust of the test program without prescribing any of the structural details.

6.2. To answer the COIs, the test planner's focus must shift from "What the system is required to do," to "How do we measure the system's performance." Therefore, test planners pursue the test design "problem" from a different perspective (the horizontal direction in Figure A4.2) than

was used to develop the COEA in the strategy-to-task framework (the vertical direction). Test planners must organize the available MOEs and MOPs in ways that best support objective, scientifically-based test and evaluation of the system's ability to accomplish the operational tasks. If there are insufficient MOEs and MOPs to answer the COIs, then the operating command and testers must develop addition measures until the questions can be answered.

7. The OT&E Test Concept. The test concept is a road map driven by the system's requirements documents, the acquisition strategy, and the basic principles of OT&E. It serves three basic functions: articulates how the OT&E will validate system performance in terms of strategy-to-

task and the system requirements; describes how OT&E activities support the system acquisition strategy; and provides the rationale for all subsequent OT&E planning. Test planners outline how they will use available test resources, facilities, ranges, analysis techniques, and modeling and simulation (M&S) to reduce acquisition risk and answer the COIs. Rough estimates are made of test scenarios, assumptions, threat laydowns, schedules, resource requirements, and test limitations. The test concept forms the basis of an executable OT&E plan. For OSD oversight programs, OSD/DOT&E requires the test agency to brief their test concept at least 120 days prior to the start of test. HQ USAF/TE must preview and approve all test concept briefings prior to presentation to OSD/DOT&E.

8. Developing the OT&E Plan. The OT&E plan translates the test concept into detailed test objectives, scenarios, methods, procedures, resources, and responsibilities. Its main purpose is to answer the COIs using the scientific method in an independent, operationally realistic investigation. Initially outlined during early planning, the OT&E plan is fully developed and exercised during detailed planning.

8.1. The OT&E plan must maintain linkage to the military need and the MOEs developed for the system in the MNS, ORD, COEA, and the strategy-to-task framework. The MOEs, MOPs, and evaluation criteria should provide good indications of whether the system can meet user requirements in realistic, total systems ("end-to-end") operational scenarios.

8.2. Test planners and analysts break down operational tasks into manageable test objectives for which specific

data is collected. They devise specialized tools, analysis techniques, and test methodologies to evaluate each operational task element. A variety of tools may be needed, to include modeling and simulation. Seldom will a single test objective, model, simulation, or evaluation technique produce all the necessary data for an MOE or MOP. Multiple tools and methods increase confidence in the validity of the test results.

8.3. Occasionally requirements, thresholds, or criteria are missing, not attainable, not "testable" or verifiable during test, or need further clarification or analysis. In these cases, test planners must assist the operating command in clearly defining the missing elements in such terms that can be demonstrated in objective test and evaluation. Test planners do not establish requirements or criteria.

8.4. For a variety of reasons, the test plan or test concept may differ from the operational environment assumed in the COEA and the ORD. Possible differences include less robust threat representations, less than totally realistic operational test scenarios, safety and operating restrictions, small sample sizes, and configuration differences between the test articles and the system as represented in the COEA. These test limitations and their impacts on test outcomes should be explained in quantitative terms if possible.

8.5. During the evaluation, testers aggregate the conclusions drawn at the MOP level upward to answer sequentially higher-level questions at the MOE, COI, or operational task levels as shown in Figure A4.2. Reporting procedures are described so timely information is provided to decision authorities.

GLOSSARY OF TERMS

Accreditation. In computer modeling and simulation, an official determination that a model or simulation is acceptable for a specific purpose. (Joint Pub 1-02)

Critical Operational Issue (COI). A key operational effectiveness or suitability issue that must be examined in OT&E to determine the system's capability to perform the mission. A COI is normally phrased as a question to be answered in evaluating a system's operational effectiveness and/or suitability. (DoDI 5000.2)

Deficiency Report (DR). A report to provide data pertaining to both deficiencies and proposed enhancements on operational and logistics supportability of new systems or equipment during all phases of T&E. (TO 00-35D-54)

Joint Reliability and Maintainability Evaluation Team (JRMET). Assists in collecting, analyzing, and categorizing R&M data during DT&E and IOT&E. The JRMET is chaired by a member of the SPO and includes representatives from the supporting and operating commands, test organization, the operational test agency, and when appropriate, contractor personnel as technical advisors.

Measure of Effectiveness (MOE). A measure of a system's task accomplishment.

Measure of Performance (MOP). A qualitative or quantitative measure of a system's capabilities or characteristics. It indicates the degree to which that capability or characteristic performs or meets the requirement under specified conditions.

Operational Effectiveness. The overall degree of mission accomplishment of a system when used by representative personnel in the environment planned or expected (e.g., natural, electronic, threat, etc.) for operational employment of the system considering organization, doctrine, tactics, survivability, vulnerability, and threat (including countermeasures, initial nuclear weapons effects, nuclear, biological, and chemical contamination (NBCC) threats). (DoDI 5000.2)

Operational Reliability. The probability that an operationally ready system will react as required to accomplish its intended mission or function as planned, excluding the effects of enemy action, may be specified as an estimated or an achieved reliability. (AFR 80-5)

Operational Suitability. The degree to which a system can be placed satisfactorily in field use, with consideration

given to availability, compatibility, transportability, interoperability, reliability, wartime usage rates, maintainability, safety, human factors, manpower supportability, logistics supportability, natural environmental effects and impacts, documentation, and training requirements. (DoDI 5000.2)

Operational Task. An individual military operation accomplished in support of an operational objective.

Realistic Test Environment. The conditions during test under which the system is expected to be operated and maintained, including the natural weather and climatic conditions, terrain effects, battlefield disturbances, and enemy threat conditions which best represent the operational environment.

Reliability. The ability of a system and its parts to perform its mission without failure, degradation, or demand on the support system. (DoDI 5000.2) (AFM 11-1)

Survivability. The capability of a system to avoid or withstand man-made hostile environments without suffering an abortive impairment of its ability to accomplish its designated mission. (DoDI 5000.2) Capability of a system to accomplish its mission in the face of an unnatural (man-made) hostile, scenario-dependent environment. Survivability may be achieved by avoidance, hardness, proliferation, or reconstitution (or a combination). (AFM 11-1)

Susceptibility. The degree to which a device, equipment, or weapon system is open to effective attack due to one or more inherent weakness. A function of operational tactics, countermeasures, probability of enemy fielding threat, etc. Susceptibility is considered a subset of survivability. (DoDI 5000.2)

Sustainability. The ability to maintain the necessary level and duration of operational activity to achieve military objectives. A function of providing for and maintaining those levels of ready forces, materiel, and consumables necessary to support military effort. (Joint Pub 1-02)

Test. Any program or procedure that is designed to obtain, verify, or provide data for the evaluation of research and development (other than laboratory experiments); progress in accomplishing development objectives; or performance and operational capability of systems, subsystems, components, and equipment items. (DSMC Glossary)

Test and Evaluation (T&E). Process by which a system or components are compared against requirements and specifications through testing. The results are evaluated to assess progress of design, performance, supportability, etc. The term "evaluation" denotes the review and analysis of data produced during current or previous testing and data obtained from test conducted by other government agencies and contractors, from operation and commercial experience, or combinations thereof.

Test Director. Directs the test team and oversees execution of OT&E according to the test plan. Exercises overall responsibility for achieving plan objectives.

Validation. In computer modeling and simulation, the process of determining the degree to which a model or simulation is an accurate representation of the real world from the perspective of the intended uses of the model or simulation. (Joint Pub 1-02).

Verification. In computer modeling and simulation, the process of determining that a model or simulation implementation accurately represents the developer's conceptual description and specifications. (Joint Pub 1-02)

Weapon System. A combination of one or more weapons with all related equipment, materials, services, personnel, and means of delivery and deployment (if applicable) required for self-sufficiency. (Joint Pub 1-02)

ABBREVIATIONS

ACAT	Acquisition Category
ADM	acquisition decision memorandum
AETC	Air Education and Training Command
AFAE	Air Force Acquisition Executive
AFMC	Air Force Materiel Command
AFI	Air Force Instruction
AFOTEC	Air Force Operational Test and Evaluation Center
AFSARC	Air Force System Acquisition Review Council
B-LRIP	beyond low-rate initial production
CIP	critical intelligence parameter
COEA	Cost and Operational Effectiveness Analysis
COI	critical operational issue
COMSEC	communications security
COTS	commercial off-the-shelf
CSAF	Chief of Staff of the Air Force
CT	contractor test
CTEIP	Central Test and Evaluation Investment Program
DAB	defense acquisition board
DAC	Designated Acquisition Commander
DAE	defense acquisition executive
DoD	Department of Defense
DR	deficiency report
DT&E	development test and evaluation
DTIC	Defense Technical Information Center
EEFI	essential elements of friendly information
EIS	environmental impact statement
EOA	early operational assessment
FOIA	Freedom of Information Act
FOT&E	follow-on operational test and evaluation
FOUO	for official use only
FY	fiscal year
HOI	headquarters operating instruction
HUMINT	human intelligence
IAW	in accordance with
IMINT	imagery intelligence
IOC	initial operational capability
IOT&E	initial operational test and evaluation
JT&E	joint test and evaluation
JITC	Joint Interoperability Test Center
LOA	letter of agreement
LOU	letter of understanding
LRIP	low rate initial production
MAJCOM	major command

MNS	mission need statement
MOA	memorandum of agreement
MOE	measure of effectiveness
MOP	measure of performance
MOU	memorandum of understanding
M&S	modeling and simulation
MS	milestone
NATO	North Atlantic Treaty Organization
NDI	nondevelopmental item
OA	operational assessment
O&M	operations and maintenance
OPSEC	operations security
ORD	operational requirements document
OSD	Office of the Secretary of Defense
OTA	operational test agency
OT&E	operational test and evaluation
OUE	operational utility evaluation
PE	program element
PEO	program executive officer
PI	program introduction document (also PID)
PID	program introduction document (also PI)
PMD	program management directive
QOT&E	qualification operational test and evaluation
R&D	research and development
RTO	responsible test organization
SAE	Service Acquisition Executive
SAF	Secretary of the Air Force
SECDEF	Secretary of Defense
SIGINT	signals intelligence
SM	single manager
SOW	statement of work
SPD	system program director
SSS	source selection sensitive
STA	system threat assessment
STAR	system threat assessment report
T&E	test and evaluation
TED	threat environment description
TEMP	test and evaluation master plan
TIPP	test investment planning and programming
TPWG	test planning working group
TD&E	tactics development and evaluation
UDS	universal documentation system
VV&A	verification, validation, and accreditation

OT&E CONTACTS

<u>Command or Organization</u>	<u>Location</u>	<u>Office Symbol</u>	<u>DSN Number</u>
HQ USAF	1530 Air Force Pentagon, Rm BE939 Wash DC 20330-1530	TEP*	225-0900
	1530 Air Force Pentagon, Rm 4D866 Wash DC 20330-1530	TER	227-1165
HQ AFOTEC 8500 Gibson Blvd S.E.	Kirtland AFB NM 87117-5558 Plans, Policy, and Requirements Directorate	XR	246-5141
	Policy and Procedures Division	XRX*	246-5242
	Resource Management Directorate	RM	246-0311
	Research Services Directorate	RS	246-5341
	System Analysis Directorate	SA	246-5331
	Safety Directorate	SE	246-5320
	Security Directorate	SP	246-5207
	Special Test Directorate	ST	246-0631
	Weapon Systems Directorate	TF	246-5326
	C4I Systems Directorate	TK	246-5246
	Space and Missile Systems Directorate	TS	246-4209
	Weather Support Directorate	WE	246-2644
AFEWC	Liaison Officer at AFOTEC	OL-CH	246-8450
AFIC	Operating Location at AFOTEC	OL-AF	246-2361
AFMC	Liaison Officer at AFOTEC	HQ AFOTEC/SA	246-5450
AFOTEC			
Det 1	203 Losie St Scott AFB IL 62225-5363	CC	576-3524
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Det 5	30 North Wolfe Ave Edwards AFB CA 93523-5000	CC	527-3666
OL-RC	APO AE 09094	CC	489-6721

OL-TF	Nellis AFB NV 89191-5000	CC	682-2916
OL-DL	PO Box 11037 Tucson AZ 85734-1037	CC	924-6918
OL-PC	730 Patrick Ave Falcon AFB CO 80912-7300	CC	560-1110
ACC	Langley AFB VA 23665-5001	DRM*	574-7597
AFIA	Kelly AFB TX 78243-5000	XP*	969-2157
AFMC	Wright-Patterson AFB OH 45433-5001	(TBD)	(TBD)
CSTI	Wright-Patterson AFB OH 45433-5001 LAT*	785-3161	
AFRES	Robins AFB GA 31098-6001	XPQ*	468-5400
AFSOC	Hurlburt Fld FL 32544-5000	XPT*	
SMOTEC	Hurlburt Fld FL 32544-5000	CC	
AFSPACECOM	Peterson AFB CO 80914-5001	DOT*	692-9643
AMC	Scott AFB IL 62225-5001	XRT*	576-3903
USAFMC	Pope AFB NC 28308-5000	CC	486-2443
ATC	Randolph AFB TX 78150-5001	XPR*	487-3092
AWS	Scott AFB IL 62225-5008	PMA*	576-3268
NGB	Pentagon Wash DC 20310-2500	AQ*	224-0188
AATC	Box 11037, Tucson AZ 85734-1037	DT	924-6927
PACAF	Hickam AFB HI 96853-5001	DOQQ*	449-6331
USAFE	APO NY 09012-5001 DOQ*	480-6921	

*Command Focal Point for OT&E